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LIFE

OF

DR JOHN REID,

LATE CHANDOS PROFESSOR OF ANATOMY AND MEDICINE IN THE UNIVERSITY OF ST ANDREWS.

BY GEORGE WILSON, M.D.,

AUTHOR OF THE "LIFE AND WORKS OF THE HON. HENRY CAVENDISH."

SECOND EDITION.

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REID, John [1809-49]

BZP (Reid)

"Then it came to pass a while after, that there was a post in the town that inquired for Mr Honest. So he came to the house where he was, and delivered to his hand these lines: Thou art commanded to be ready against this day sevennight, to present thyself before thy Lord at his Father's house. And for a token that my message is true, 'All the daughters of music shall be brought low.' . . . The last words of Mr Honest were, Grace reigns! So he left the world."—PILGRIM'S PROGRESS.

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PREFACE.

THERE are so many ways of writing Biography, that it is vain to inquire which is the best. One canon, however, may be safely insisted on, namely, that the record of a man's career should correspond in tone to the character of him whose life it chronicles. The prevailing characteristics of Dr John Reid were truthfulness, simplicity, honesty, and courage, and I have tried to reflect them in the following Life; aiming at the same time at brevity, the virtue which biographers seem to find it most difficult to realise.

Some verses which I published soon after Dr Reid's death, led to my being urged by a number of his medical friends to become his biographer; and I trust that a tribute to the memory of a great Anatomist and Physiologist will not be deemed the less appropriate, that it proceeds from the pen of a Chemist.

To do honour to Dr Reid's memory, however, has been much less my motive, than to tell the story of a life which, especially in its later scenes, is fraught with a solemn and cheering lesson to all thoughtful and earnest men. I have therefore omitted everything purely technical, which might render it unsuitable for perusal by members of any profession, or by persons of either sex; whilst I have thrown into the form of footnotes, the few references which I have had occasion to

make to topics interesting or intelligible only to medical men. The omissions in question have not prevented me giving a full sketch of his labours and discoveries as an Anatomist and Physiologist; and I have felt the more free to write for all readers, that four biographical sketches or memoirs of Dr Reid have already appeared in medical periodicals, to which purely medical readers may be referred. The earliest of those memoirs was contributed by Professor Fergusson, of King's College, London; the second by Dr Carpenter, of University College, London; the third by Dr John Hughes Bennett, of the University of Edinburgh; and the fourth was compiled from materials chiefly furnished by Dr John Rose Cormack, of Putney. Those gentlemen were all intimate and attached friends of Dr Reid's, and members of his profession. With the exception of Mr Fergusson's brief sketch, I have availed myself of the memoirs named above, in the succeeding pages, where they will be found specially indicated.

It is customary for authors in their prefaces to acknowledge and thank those who have assisted them. I do not follow that laudable custom here, because, in truth, I regard myself as having been but a pen in the hands of Dr Reid's friends. I will mention, however, that it was Dr David Skae who first induced me to think of becoming Dr Reid's biographer, at a period when other biographies of him were not known to be in contemplation. Dr Henderson, one of Dr Reid's dearest friends, was soon enlisted in the cause; and afterwards Dr J. Y. Simpson, whose knowledge of the subject of this memoir was of much older standing than that of any other of his medical friends. With great

kindness he accompanied me to Bathgate, introduced me to Dr Reid's relatives, and by his good offices, procured for me a large number of letters, extending from 1826 to 1849. My other obligations to him, and to the many friends who have contributed to the completeness of this volume, will appear so fully in its pages, that for the reason already assigned I do not detail them here.

For the satisfaction, however, of the reader, I will state that Dr Reid's relatives, as well as those of Mrs Reid, yielding to the strongly expressed desire of his medical friends, have given me every assistance. I have learned much in conversation from them, which is not formally authenticated in the succeeding pages; but to prevent any mistake, I have submitted this work in manuscript to Mrs Reid, and to a sister of Dr Reid's, so that its general accuracy may be trusted, although I alone am responsible for the special contents. Dr Skae has added to his other favours by reading the proof-sheets along with me.

It is due to my Publishers to add, that the delay which has attended the appearance of this Work is entirely owing to me; and in extenuation of myself I may plead, that when I undertook the work, I was engaged in writing another Life, which, in the end, proved a much more tedious undertaking than I expected it to be; and that I have given my first available leisure to the completion of this volume.

G. W.

24, Brown Square,
Edinburgh, March 1852.

PREFACE TO SECOND EDITION.

In committing to the press a Second Edition of the "Life of Dr Reid," I have to express the satisfaction with which I have learned, from a large circle of his friends, many of whom knew him more intimately, and for a longer period, than I did, that they regard the Life as a faithful narrative, and a just estimate of character. The reader, therefore, has the assurance that the Portrait contained in the following pages, however insufficient and imperfect (as all biographical sketches must be), is, nevertheless, in the main, honest and true. What I have said in my own name, I have always explicitly distinguished from what I have said in the name of the subject of my Sketch; and I now commend it as the faithful record of a sorrowful, but instructive tragedy, to the thoughtful consideration of the reader.

G. W.

24, Brown Square,
Edinburgh, September 1852.

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LIFE OF JOHN REID, M.D.

CHAPTER I.

CHILDHOOD—SCHOOL AND STUDENT LIFE.

"He was fresh from Edinburgh, with college prizes, high character, and promise: he had come to see our Schoolmaster, who had also been his. We heard of famed professors, of high matters classical, mathematical,—a whole wonderland of knowledge: nothing but joy, health, hopefulness without end, looked out from the blooming young man."

Edward Irving, by Thomas Carlyle.

JOHN REID was the sixth child of Henry Reid and Jean Orr, and was born at Bathgate, in Linlithgowshire, on April 9, 1809. His father was a man of great shrewdness and sagacity, who, in spite of many disadvantages, raised himself to a position of repute and comparative wealth among his townsmen. He was a farmer, and also dealt largely in cattle; and his success was such, that he was able to secure for his children, and especially for the subject of this Memoir, a much better education than it had been his own fortune in early life to enjoy.

No marvellous tales are told of John Reid's youthful days, so far, at least, as intellectual precocity is concerned. He was a quiet, healthy, rather heavy-looking child, affectionate, and very obedient. Infant schools were unknown in the beginning of the century, and John's first instructions were received in the midst of a circle of little girls, who were

learning to sew. I had some conversation with the venerable dame who, forty years before, presided, along with a sister, over this sewing-school. She had known John Reid from his very birth, and received him as a pupil before he was able to walk. She thought him gentle in his manners, singularly docile, and fond of books,—above all, of a folio copy of Ralph Erskine's works. To his parents he was specially dutiful and obedient. It is remembered in his family, that on one occasion he had incurred punishment for some boyish offence. A sister advised him to run away; but he went up to his mother, and submitted to chastisement. Such incidents would not be worth recording, did they not illustrate the earliest indications of two of the most strongly marked features of John Reid's mature character. The incipient bibliomania, which made the child prefer the tall folio to any smaller volume, grew with his growth, and became ingrained in his nature. In later life, he was a great reader, as well as a considerable writer, of books; but he retained almost to the last a love for a book merely as a book, and, next to his relatives and friends, he named his library as the object from which it cost him the sorest pang to part. His filial obedience also ripened with his years. Throughout life the will of his father and mother was in all minor matters his law; and long after he had reached an age when even dutiful children think more of loving than of obeying their parents, he continued to yield them a cheerful submission on every point which did not interfere with his own conscientious convictions. Till his strength totally failed him, he wrote at frequent intervals from his death-bed to his mother,—and to her, his only surviving parent, his latest letters were addressed.

Bathgate is a small country town, situated on one of the high roads between Edinburgh and Glasgow. It is distant about eighteen miles from the former, and twenty-four from the latter; but its commercial relations are chiefly with the more distant city. In 1809, and for many years subsequently,

the great majority of its humbler inhabitants were weavers, and were supplied with work from Glasgow. In John Reid's early days, it was a quiet but cheerful place; the monotony which would otherwise have characterised a town of hand-loom weavers, all working within doors, being diversified by the transit, some dozen times a-day, of the stage coaches which passed and repassed between the eastern and the western metropolis of Scotland. The railway here, as elsewhere, has banished all rival means of conveyance, and is rapidly changing the character of the population. Stone quarries, beds of ironstone, and coal-pits, are now wrought to a considerable extent in the neighbourhood of Bathgate, and are introducing a more rough and rugged, and greatly less educated race, than the intelligent speculative weavers who formerly flourished in the town. Its weavers, however, were not its only intelligent inhabitants. Small though it is, it has given to the world three professors, whose fame is more than European. One was the subject of my sketch; the others are, that learned and original naturalist, the Rev. Dr Fleming, of the New College, Edinburgh, and Dr J. Y. Simpson, who was Dr Reid's schoolfellow and friend from boyhood.

In one intellectual respect, however, to the disadvantage of John Reid, Bathgate is now, and has been for years, celebrated in a way which it was not in his earliest days. A prosperous native of the place left a large sum of money to endow a school, where an excellent education is now given. John Reid, whose school-life began before this academy was in operation, had the ill fortune to be placed under a worn-out teacher (the best, however, who could readily be had), who in a slovenly way taught Greek and Latin to boys who did not know English. He ultimately obtained, as assistant, Mr Taylor, an accomplished student and excellent teacher, who in the end was made rector or head-master of the Bathgate Academy. Mr Taylor afterwards married a sister of John Reid, and the brothers-in-law became greatly attached to each other. The new teacher, however, came too late to

remedy all the defects of the early training of the subject of my sketch, who to the end of his days lamented that, at a period when he should have been occupied with the grammar and orthography of his own language, he was set to study Latin, which had no attractions for a boy. He felt to the last the disadvantages attending an imperfect acquaintance with the fundamental principles of his own tongue, which, when not mastered in early life, are seldom acquired in later years.

At school, John Reid was not remarkable for great quickness or vivacity, nor, in spite of his health, strength, and courage, was he a ringleader in the sports of the play-ground. What he cared to learn he mastered by patient study, and retained firmly; but his schoolfellows did not anticipate for him the distinction which he afterwards attained; and a certain shyness and reserve, which did not desert him in later life, led to his keeping by himself.

After profiting for some years by the instructions received at the Bathgate school, he was transferred to the University of Edinburgh at the age of fourteen.

For the first two or three years of his residence in Edinburgh he attended the literary classes, and was chiefly engaged in the study of Greek and Latin, and, to a less extent, in the acquisition of mathematics, for which, however, including arithmetic, he had no great liking. He was under the guardianship of the Rev. Peter Learmonth, now of Stromness, who writes to me thus in reference to his pupil:—"Endowed with talents of a very superior order, he early attained habits of close and persevering study. He was an excellent scholar, and his attainments varied and extensive, for his age. That he did not appear among the foremost nor attain high academical honours, arose, I am confident, more from a modest diffidence in himself, and a want of that ambition which has elevated to a high and distinguished position scholars of far inferior talents and acquirements."

A scholar, in the wider sense of that term, as used aca-

demically, Dr Reid never considered himself, nor was considered by others; nor could he be called an ardent lover of literature, which by him was valued more as a medium of communicating and preserving truth, than as a material for embodying beauty. In later life, he limited himself on principle, in his scientific studies, almost entirely to those branches of medical knowledge which were most akin to his favourite pursuits, and he was not a discursive amateur in pure literature or the fine arts. Before, indeed, he entered on the study of medicine, he appears to have been actuated more by a sense of duty and a spirit of obedience, than by any very strong relish for the tasks prescribed to him. I should perhaps except poetry, which he was fond of reciting aloud from an early period; but it does not appear from the testimony of any of his friends or acquaintances, that he otherwise displayed the characteristics of the poetical temperament. He rather, indeed, repressed than encouraged his æsthetical sympathies. The gymnastic influence, however, of his studies was early exemplified; and John Reid's mind was peculiarly one which gained by collision with others.

"I remember," writes Dr Simpson, "his return to Bathgate at the Christmas which followed his first removal to Edinburgh, as if it were yesterday. A group of us, just let loose from school, encountered John Reid, immediately after his arrival, in one of the streets of the village: I could show you the precise spot. His own former class instantly surrounded him; and the younger scholars, such as I was, anxiously clustered round at a respectful distance. Though Edinburgh was only eighteen miles distant, few or none of us had visited the capital; and we listened eagerly and wonderingly to what he told us of it, and particularly of the College and its Professors. But, like most others, I believe, I was on the whole less awe-struck with this than with the strange metamorphosis which appeared to have mystically occurred in our former schoolmate; for the rough country schoolboy, who had left us two short months before, had become suddenly changed

into a sharpish college student, wearing an actual long-tailed coat, and sporting a small cane."

What induced John Reid to select medicine as a profession is not precisely known. His first inclinations,—or rather, perhaps, those of his friends in his behalf,—were towards the church; but he was induced, chiefly, I believe, by the influence of Dr Weir of Bathgate, to turn his attention to medicine, and from the moment when he entered on its study, he devoted himself to it with the greatest ardour. His medical studies commenced in 1825, and were formally prosecuted till 1830, when he nominally ceased to be a student, and acquired the titles of surgeon and physician. From the wide circle of subjects included in the round of medical study, he ultimately selected anatomy and physiology as his favourite pursuits; but at first he took great interest also in medicine as a practical art.[1]

To the majority of unprofessional readers, the object of anatomy is sufficiently familiar; that of physiology is probably less so. Anatomy treats of the form and structure of plants and animals: physiology of the actions or functions of their various parts or organs. The anatomist corresponds to the mechanician who describes the shape, dimensions, and relative positions of the different wheels, levers, and valves of an engine which he takes to pieces as he explains them. The physiologist is like the engineer who, whilst the machine is in motion, points out how wheel works into wheel, and lever upon lever. Anatomy deals almost entirely with *dead* plants and animals, although its real aim is to explain their living structure. Physiology as much as possible observes the living being, and always assumes life in its discussions. The two

[1] Dr Simpson believes that Dr Reid's appreciation of the advantages and importance of *Experimental Physiology* (the department in which he afterwards so highly distinguished himself) was first awakened in him by a perusal of Haller's work *On the Sensibility of Parts*, which, during the summer vacation, the two friends read together in French, for the sake of acquiring that language.

sciences are of necessity intimately connected. The physiologist *must* be an anatomist, for he, plainly, who would explain the action or function of the heart or brain, must know what a heart or brain is. The anatomist is not compelled to become a physiologist to the extent that the physiologist must become an anatomist, especially if his object is only to apply his knowledge to the practical requirements of medicine as the healing art. But as little or no interest would attach to the study of the different parts of a steam-engine except in relation to its motions when at work, so the anatomist considers the heart not merely as a mass of flesh hollowed out into cavities, but as a living pump which propels the blood; and the nerves are for him not merely white cords traversing the body in various directions, but the inlets of sensation and the outlets of the will. There are two great divisions of anatomy, including physiology: that, namely, of plants and that of animals, and human anatomy forms the most important subdivision of the latter. It was to it that John Reid's attention was chiefly devoted; but, like other great anatomists, he did not neglect any of the branches of his science.

It was fortunate for him that at the period when he commenced his studies in medicine, the Chair of Physiology in the University of Edinburgh was filled by Dr Alison, whose judicial impartiality in weighing conflicting evidence peculiarly qualified him for guiding beginners in the study of the intricate science which he taught. From him John Reid received much kindness throughout his entire career. He was fond of referring to Dr Alison as his master in physiology; and to him, as well as, in lesser part, to the late Dr Andrew Duncan, he attributed his early preference of physiology to other branches of medical study. Beyond the walls of the University the large and flourishing Anatomical School, which had been previously presided over by Dr Barclay, was, during John Reid's pupilage, under the care of Dr Knox, then at the height of his reputation as a public teacher. From the beginning he ardently devoted himself to the study of anatomy

under this famous lecturer. "When he began to study medicine in 1825," writes Dr Simpson to me, "Dr Macarthur, he, and I lodged together in the upper flat of a tall house in Adam Street. He cared comparatively little for chemistry and chemistry books; but he used to pore, hour after hour, over Fyfe's four-volume Anatomy, and he attended Dr Knox's lectures most zealously twice a-day—in the forenoon and evening. I was then a very young student, at the Greek and Humanity classes in the college, but I was occasionally allowed by Dr Reid to look into his medical books, or listen to his first demonstrations at home, and sometimes as a special favour I was taken by him on an evening to hear even one of Dr Knox's lectures."

An unusual number of talented young men, many of whom have since risen to the highest distinction in their profession, were then pupils of Dr Knox, whose eloquent lectures, displaying a rare union of scientific precision and literary elegance, graced and pointed by flashes of wit and humour, invested anatomy and physiology with new attractions for every class of intelligent listeners. In these fortunate circumstances, guided by the ablest teachers, and stimulated by contact and collision with a large band of very clever fellow-students, John Reid prosecuted the sciences which were afterwards to make him famous. Some extracts from his letters to his relations at home will illustrate this period.

To his Father.

"*December* 8, 1827.

"I am engaged every hour except the dinner hour, from nine o'clock in the morning till seven at night, so that if I read upon the lectures as much as I ought to do, I have no time to trifle."

To the same.

"*December* 14, 1827.

"My life is here as it ever has been, like a horse in a mill, the same thing over again."

More special references to his favourite studies occur in later letters.

To a Sister.

"*January* 24, 1828.

"I am busy dissecting, now the subjects are pretty plenty. People may watch as they may, but we will have them in spite of them. There are rascals here who will do anything for money, and these are fit hands for such jobs." [1]

On the 14th of February 1828, he writes to his father in reference to the dissecting room: "This is the most important of all the medical classes for the surgeon. For to pretend to cure the human body without an intimate knowledge of its different parts, is like fighting in the dark; you are as likely to fire upon your friends as your foes."

In November 1828, which is the commencement of the Edinburgh academical year, he writes to the same relative—"I am determined to be very studious this winter, as you know I intend to attempt passing surgeon this winter. But you must keep this a secret."

[1] The unprofessional reader who takes interest in the horrors and mysteries of resurrectionism as it existed before the passing of the Anatomy Bill, will find these very graphically depicted in the Life of Sir Astley Cooper by his nephew, Bransby Cooper. Medical men were placed between the horns of a very sharp-pointed dilemma before the passing of the bill referred to. The law would not protect them in their professional claims, nor would government appoint them to military or naval posts, unless they had a diploma which testified to their having studied Anatomy practically; yet if they took the only means of acquiring a knowledge of Anatomy which were open to them, they were liable to prosecution as felons; and even when not interfered with, they had to pay exorbitant sums to the body-snatchers who robbed graves for them. The appalling tragedies which occurred in Edinburgh and London, in connection with the sale of dead bodies to the anatomists, did more than anything else to put matters on a better footing. The facilities for learning anatomy in John Reid's student-days were much fewer than they are now.

"*December* 1, 1828.

"The subjects are very scarce this year; I have, however, got a part of one."

"*April* 14, 1829.

"My birthday was on Thursday last. I have now got out of my *teens*. I am beginning to get ashamed of myself: twenty years of age and done nothing; still a dependent upon my parents. But if I am twenty, I am also *surgeon*. After an examination of about half an hour, I was told they were very well pleased with me, and that I would get a diploma. I was examined yesterday. . . . If a pale face and an emaciated body be a test of having studied hard, I must have been a very idle student indeed. However that may be, I must begin to prepare very vigorously for Physicians' Hall, where, according to all accounts, they don't allow us to pass so easily."

On the 9th July 1830, writing to the same relative, he says—"Our second examination[1] was on Tuesday last, our last is to-morrow, and on Monday we are dubbed *Doctors*. These two last examinations are trifling, indeed we consider it as almost all over when the first examination is passed." The third examination here referred to, is the defence of the thesis or inaugural dissertation, which each graduate is required to write on some medical topic, and, in imitation of the ancient university practice all over Europe, to defend publicly. In 1830, the theses were written in Latin. Dr Reid's was "*De Aneurismate;*" on Aneurism.[2] The defence was then and is still merely nominal; but since the period referred to, the Medical Faculty of the University of Edinburgh have introduced the excellent practice of awarding gold medals to

[1] For the degree of Doctor in Medicine.

[2] His thesis was chiefly devoted to the method of curing aneurism by tying the affected artery on the distal side of the tumour. He is believed to have been led to select this subject from interest in the writings of Dr Wardrop of London, formerly Physician to George IV., who was born in the neighbourhood of Bathgate, and practised for a time with great success as a surgeon and oculist in Edinburgh.

the authors of the best theses. Several celebrated works have been Edinburgh medical theses, or expansions of them. Among these, two of the most famous are, Dr Joseph Black's essay on Magnesia Alba, and Dr Pritchard's works on the Races of Mankind.

On August 1st, 1830, John Reid's student-life may be said to have ended. On that day, along with one hundred and six other candidates, he was publicly invested with the title of Doctor. The ceremony, which goes among the students of Edinburgh by the name of "Capping," is always looked forward to with great interest, and is the only occasion on which the general public, including ladies, take part in academical proceedings. Students of the University of Edinburgh do not wear any academical costume; but on the 1st of August the medical graduates of the year, attired in black gowns resembling generally those of Oxford and Cambridge, assemble in one of the largest class-rooms in presence of the Principal and Professors of the University, the Magistrates of the city, and a large concourse of spectators of both sexes. The more important parts of the ceremony are the administration of a solemn oath to the graduates, and the offering up of prayers by the Principal, but as they are couched in Latin, only a small portion of the audience can intelligently follow them. An address in English from one of the Medical Professors, which is often the occasion of eloquent appeal and important advice, is always listened to with attention. But in the eyes of the students, the chief and indeed only essential part of the process is the "CAPPING,"[1] which is

[1] The ceremony referred to above should, I believe, in strictness of language be termed the *Hatting* rather than the *Capping:* the hat being the academic symbol of the Doctorate, the cap the sign of the *status pupillaris*. Each Doctor, also, should have a hat to himself, instead of one serving for all. To modern unacademic eyes, however, accustomed to the stiff material and towering dimensions of our awkward hats, the soft and pliant velvet hat of an older period passes for a cap. Hence the name by which the graduates of Edinburgh, unversed in the mysteries of the diversified graceful caps, hoods, and gowns of the English Universities, distinguish

performed by the Principal, who, as the graduates one by one pass before him, lays on the head of each, for a moment, a velvet cap, and utters the words, *Te medicinæ Doctorem creo!*—I create thee Doctor of Medicine! A single touch of the wonder-working cap suffices to transmute the most thoughtless medical student into a dignified physician, and the happy graduate at length finds himself entitled to write after his name the M.D. which for four long years have appeared to him the two most important letters of the alphabet. John Reid duly underwent the transforming influence of the cap, and provided with a physician's as well as a surgeon's diploma, bade farewell for ever as a student to the sound of the College bell.

the solitary ceremony at which, once in his college-life, an Edinburgh student of medicine wears for some two hours a gown, and for a moment a Doctor's hat.

There was a tradition in my time that the Graduation-cap (1839) had once belonged to George Buchanan, and in truth, had been his Doctor's hat. I learn, however, from the Reverend Principal Lee, that there is no authority for either statement. The ancient cap in question, which, apart from its traditional celebrity, had acquired an interest from the number of famous Doctors (John Reid among others) whom it had made, has recently been replaced by a new one.

At the University of St Andrews, with which Dr Reid was afterwards connected, as sole medical professor, the Graduation-cap is generally understood to have been made out of part of a velvet dress once worn by John Knox. The legend, however, is discredited by many.

CHAPTER II.

CLERKSHIP IN THE EDINBURGH INFIRMARY—WINTER IN PARIS —PEDESTRIAN TOUR ON THE CONTINENT—RETURN HOME.

"Not what I Have, but what I Do, is my Kingdom. To each is given a certain inward Talent, a certain outward Environment of Fortune; to each, by wisest combination of these two, a certain maximum of Capability. But the hardest problem were ever this first: To find by study of yourself and of the ground you stand on, what your combined inward and outward Capability specially is. For alas! our young soul is all budding with Capabilities, and we see not yet which is the main and true one."

Sartor Resartus.

THERE are few periods more happy in a young doctor's life than the weeks which immediately succeed his graduation. The most diligent student is thankful to escape from the irksomeness of a round of college, hospital, or dispensary duties, which occupy nearly the whole day, during an almost unbroken session of ten months. It can rarely happen that each of the sciences which occupy the attention of the medical student is equally interesting to him, and there must always, in a large school of medicine, be some teachers who, more or less, try the patience of their reluctant listeners. A natural re-action, also, from the exhaustion of protracted study, and the suspense and anxiety which, even in the best prepared, the boldest, and the most hopeful pupils, attend the anticipation of the dreaded ordeal of examination, arrays the future in rainbow-colours. The youthful graduate is like the early Portuguese navigators, to whom the southern promontory of Africa was the Cape of Storms till it was reached, and the Cape of Good Hope after it was rounded; or, like Cortez, who, after braving the perils of the Atlantic, gazed from a

peak in Darien over the sea which lay before him, and vainly termed it the Pacific. On the narrow isthmus which divides the remembered restraint of student-life from the expected freedom of a professional career, Dr Reid (as I shall henceforth generally call him) did not linger long. He would have preferred, as a letter of later date will show, to prolong his student-period indefinitely; but as that could not be, he resolutely addressed himself to the task of finding work, and of executing it diligently.

Before he received his degree, he wrote to his father (27th July 1830), informing him that he had some faint hope of an appointment in the navy. He had no wish for a permanent connection with the naval service. "I should like," writes he, "to remain above three years. I think I would be very much the better of such a situation for that time. I would see a little of the world, and even the name of being in the navy would be of great advantage to me afterwards. Names go a great deal in a person's favour in our profession."

He was not destined, however, to tread the quarter-deck; and too honest and independent to remain idle, he became a clerk, or assistant-physician, in the clinical wards of the Edinburgh Infirmary. Writing to his mother, November 29, 1830, he says, "I like my clerkship very much, and I could not be under a more agreeable master than Dr Alison."

Dr Vose of Liverpool, who had a similar clerkship at a somewhat later period, writes thus of Dr Reid:—"I first became acquainted with him in the summer of 1831, in consequence of being his associate as one of the clinical clerks of Professor Alison at the Edinburgh Royal Infirmary. He had for some time—for a year, I think—been a graduate of medicine at the period to which I refer, but he devoted himself with great zeal and steadiness to his clinical duties, living in the immediate vicinity of the hospital, and passing most of his time in its wards. His fellow-clerks, who were considerably younger, and less advanced in professional know-

ledge than himself, entertained the greatest respect for his practical and pathological acquirements, and ever found him, in his intercourse with them, unaffectedly kind, obliging, and communicative. I may mention, as a proof of the estimation in which he was at this time held by his friends, that I have often heard Mr Paget, the author of the well-known work upon Hungary, who was then a clinical clerk of Dr Alison, and a distinguished student, remark that he had seldom met with a man who had so great a knowledge of professional subjects as John Reid.

"At this period the mind of Dr Reid already showed its love of original research, which was evinced by his constant pursuit of anatomical and chemical investigations at the Infirmary, and in his own rooms, in connection with the cases which were under his care."

In the autumn of 1831, Dr Reid set out for Paris, to profit by the advantages of its medical schools. He visited Dublin first, but stayed there only a few days. In a letter to his father, he characteristically remarks, in reference to the sights of the Irish capital, "I don't believe I could live in a strange town two days, if I had nothing to do but visit the curiosities, unless I had some friend to live with." He crossed from Dublin to Liverpool, and visited Manchester and London, reaching Paris in October, where he devoted himself with the greatest ardour to his favourite studies. Dr Vose, who was in the same city in 1831, writes concerning Dr Reid: "It was my good fortune, during the winter and spring of that and the succeeding year, to see much of him. He boarded, while in the French capital, at the house of a family who resided in the Rue St Jacques, as he was desirous to acquire as speedily as possible a familiarity with the language, which he did not understand colloquially at that time. His time was very completely occupied during the session by hospital practice, lectures, and dissecting. He attended the practice of Louis and Andral at the hospital of La Pitié, the clinical lectures of Louis, and occasionally those of Dupuytren

and Lisfranc, and the lectures of Andral, at the Ecole de Médecine.[1]

"Many hours daily were spent by him in the cultivation of practical anatomy, being one of four Englishmen who hired a private dissecting-room from the late M. Breschet, who was at that time *chef des travaux anatomiques*, or principal demonstrator at the School of Medicine."

To these labours he referred some three years later, in the following terms:—"Where could you have found a happier group than when you, Vose, Zeederberg, and myself, were rubbing up our anatomy at Paris under the auspices of old ——! These were merry days, in spite of old Breschet's abominable Laboratoire d'Anatomie Pratique, as it pleased the *chef des travaux* to denominate the small filthy garret, with its little black stove and small skylight window, into which eight of us were stuffed."[2] Some extracts from Dr Reid's letters from Paris will further illustrate his occupations there.

To Mr James Taylor, his Brother-in-law.

"*October* 25, 1831.

"Paris, chez M. La Saigne, 187, Rue St Jacques.

". . . I have mentioned the language. I daresay you will be anxious to know how I am getting on in that respect. At first I scarcely knew the most common phrases, from the manner in which they pronounced the words. Now, however, I am beginning to see my way a little, and I know myself considerably improved. I cannot yet make anything of the clinical lectures delivered at the hospital, though I am able to understand sentences here and there. They often make me read in the family here, and I ask them, without

[1] Louis and Andral were two of the most celebrated physicians, Dupuytren and Lisfranc two of the most celebrated surgeons, of Paris, when Dr Reid was there.

[2] Medical Times, 1851, p. 42.

the slightest scruple, the pronunciation of any word that I have the least doubt about.

"I have now seen a number of the celebrated surgeons and physicians of whom I have read and heard so much. I cannot help feeling disappointed after seeing most of the celebrated men I have seen. We are apt to expect something particularly striking about them, and we are disappointed to find them so much resemble their fellow-mortals. Perhaps part of this may arise from our having previously figured in our own minds something like a portrait of the man whose writings we have read and admired so much, and when our anxious eyes get the first glimpse of the real man, we feel somewhat astonished and disappointed at seeing him so different from what we expected."

To his Father.

"*Paris, December* 23, 1831.

"I go to one of the hospitals for three hours in the morning before breakfast; immediately after breakfast I go to the dissecting-rooms for three or four hours, then attend a lecture or two, return to dinner, and pass the evening at home. . . In the room where I dissect there are eight persons—one Scotchman, two Englishmen, one Frenchman, one German, one from the United States of America, and one from the Cape of Good Hope. . . . I feel myself as much at home here, and as comfortable, as a person can be at Paris."

In the close of this letter, which is long, and filled with descriptions of the Parisian edifices, gardens, and the like, occurs a passage very significant when taken in connection with the devoted study of the Scriptures, and great mastery of their contents, which characterised a later period in Dr Reid's life: "—— told me that my mother was angry that I had forgot my Bibles. I had really so many things to take, that I thought I might leave them, because Bibles are to be

got here as well as at home, though I am sorry to say they seem to make very little use of them."

The letter next in date, January 23, 1832, is so characteristic of Dr Reid's straightforwardness, filial deference and affection, and of the views which he entertained of medicine as a profession, that I make large extracts from it. It is addressed to his father from Paris:—

" . . . I am glad that Mr Smith has written me upon my future views of following my profession, as I intended to write you myself very soon upon the subject, as it is now absolutely necessary that I should explain them to you. Indeed, I am astonished that you should have granted me such indulgence, and that you have not demanded an explanation of them long ago. I once thought of writing an answer to Mr Smith's letter, but I have thought it more befitting that I should address myself directly to yourself. You seem to have a great horror of my going abroad, and upon this point I faithfully promise to you, that whatever may be my inclinations, I shall never do so without your permission. For I would surely be acting a most ungrateful part to those parents who have been so kind to me, were I not even to subject my wishes to please them upon subjects, the propriety of which was doubtful. You may therefore calculate upon my returning home, health permitting, about the end of April at farthest. But what am I to do when I return home? However I may dislike private practice, to that, I suppose, it will be necessary that I betake myself. The next question is, Where am I to commence? To that I would answer, Not at Bathgate, if possibly it can be avoided. There are several reasons which give me an utter repugnance at commencing practice at home. One of these is, that Dr Weir enjoys the complete confidence of the greater part of the people there, and consequently the field is occupied. Another is, that in country practice, such as Bathgate, your patients are so widely separated from each other, that the whole of your time is

taken up in travelling from one place to the other, and, as a consequence of this, your visits are generally cursory and unimproving to yourself, and, along with this, the repugnance to inspecting the body after death [is] so prevalent in country places. So that you must content yourself with little more than your present knowledge, and must bid farewell to the thought of making any considerable improvement. If the desire of making money was my only object, this, of course, would be but a trifling objection; but I could more easily forego the desire of riches than the hope of acquiring knowledge. Besides, a young man beginning the profession of medicine in his native place, labours under disadvantages to which he is not subjected in another place where he is less known; for it is very difficult to make yourself believe that the person whom you lately knew as a boy is worthy of being entrusted with the safety of the most precious of all blessings, that of health. From this, then, you will perceive that my inclinations would lead me to settle myself in some town of considerable size, where there is perhaps a small infirmary, to the superintendence of which I could some day or other aspire, and where I might have an opportunity of devoting myself to the study of my profession, without which I could never be happy. I should hope that my views are not too ambitious, considering the education and advantages in prosecuting my studies which your more than paternal kindness has enabled me to enjoy. Although the medical profession, like all others, is at present completely overstocked, and although I feel myself ill qualified and extremely repugnant at fighting my way into public favour, yet the time has come when it is necessary that I should boldly set my face to the attempt; and if I fail, I will at least have the merit of having tried it. While most of the medical students of my acquaintance have appeared to look forward with pleasure to the time when their studies should expire, and when they would be at liberty to enter upon the practice of their profession, with me it has been entirely the reverse;

for the nearer I approach that period, the greater reluctance —I had almost said horror—I feel, so that I have often wished that I had been a farmer or grazier, than to be obliged to commence private practice. This, I beg of you to believe, is not from love of ease, nor from any reluctance to sacrifice any pleasures to the toil of the profession, but from other motives, which most people would be apt to term foolish. Having, however, advanced so far in the profession as I have done, it is now too late to draw back: enter upon practice I must, and that early. I have therefore explained my views to you pretty fully; and I would be happy to know, the first time you write me, what you think of them. Be so good as tell Mr Smith, that instead of feeling offended at him for writing me on this subject, I feel heartily obliged. . . . I am very sorry that cholera appears to be approaching Edinburgh. I hope you will write me immediately if it should happen to show itself near or in Bathgate, and then you may expect me there eight or ten days after your letter reaches me; for I could not endure the idea of remaining here when I knew that my friends were in danger. . . . I can now carry away almost the whole of a lecture, but I am still a lame hand at conversation."

The next letter returns to the subject referred to in the commencement of the previous one.

"*Paris, March* 6, 1832.

"My dear Father,—It gave me no small pleasure to learn from your last letter that you have no objection to my future views regarding the manner of commencing practice; and I have again to express my obligations for the great indulgence you have ever shown me in this, as on all similar occasions. We can, however, settle this when I have returned home." The remainder of the letter is occupied with references to the progress of cholera, and to the sports of the carnival. "Talking of fat days, as they may be translated,

the Catholics have fat days and lean days. On the former, they are expected to eat as good a dinner as they can afford; on the others, they are supposed to eat nothing stronger than fish. Monsieur La Saigne, luckily for me, is not so good a Catholic as to pay a strict observance to the rules of his church, so that we keep all the fat days, and pay no attention to the lean ones. . . . I am continuing to like Paris very well, and still feel myself very comfortable in the family. The little boy is really an amusing little fellow, and he and I are great friends."

The last letter from Paris is dated April 17, 1832. A large part of it is occupied with references to the frightful mortality occasioned by cholera. A single quotation will suffice on this topic:—"We have had the cholera here for the last three weeks, in a very serious manner. Within that time it has committed considerably greater ravages than it has done in the whole of Britain during the whole time it has been there. It is generally believed, and apparently with reason, that the government does not publish in their bulletins above one-half of the number of those attacked, or only those who have entered the hospitals, and yet the published list has sometimes acknowledged above a thousand new cases in the twenty-four hours. I have seen at the same time between 200 and 300 cholerics [cholera patients] myself in one hospital; and I have counted above seventy corpses at the same time in the dead-house. You sometimes meet in the streets carts piled up with coffins, even to the number of fifty upon one cart, proceeding to the place of interment." In the close of his letter he announces his purpose of leaving Paris next day, and making a pedestrian tour, along with some medical friends, through Switzerland, before returning home. He enjoyed this tour greatly; but his pleasure was marred by the reflection that he had undertaken the journey without consulting his father, and that it involved him in unexpected expense. The following letter, referring to this

journey, bears three dates,—the first being the 23d, the last the 27th, May 1832. It was written from Ostend.

"My dear Father,—Though this letter is dated from the Netherlands, yet I intend to put it in the post-office at London myself. I am obliged to wait here three days before I can find a vessel to carry me to London, and I thought that I could not employ part of my time better than in writing to you, so that I will be able to put it in the post-office immediately upon my arrival at London; for I am afraid you will be perhaps anxious to hear from me, as the five weeks I mentioned as the time you might expect to hear from me is now on the point of expiring. I am now completely satisfied with travelling, and will return home quite satisfied with what I have [seen]. It is now time for me to think of more serious occupations, and now I bid farewell to all trifling. I have spent the five weeks since leaving Paris very agreeably, except that occasionally two disagreeable reflections came across my mind. These were, that perhaps you might not be altogether pleased with me, and I found that it required more money than I was led to believe. I was informed that travelling on the Rhine was both expeditious and cheap, and I fixed upon returning home from Switzerland by that route; but I had to travel more than 150 miles lower down the river than I expected before I could find a boat, and when I did find one, it was far from being moderate. The expense of living in an inn here for three days did not certainly enter into my calculations of the possible expense before leaving Paris. . . . You may perhaps think, and probably with justice, that after putting you to so much expense otherways, I should have been more cautious in spending money upon things not certainly necessary; and I can assure you that these reflections often came across my mind, but being, you know, very fond of travelling, and being exceedingly anxious to see places of which I had heard so much, and seeing a great number of my acquaintances here setting out, . . .

this overcame all my scruples. Whether I have done wrong or not, you are the only judge; but if I have, I believe it is the first indiscretion of the kind of which I have been guilty, and I do promise you it shall be the last. . . . It was a week after leaving Paris before I quitted the French territories. I was a fortnight in Switzerland and Savoy, a week in Germany, and now I have been eight or nine days in the Netherlands."

On the 24th he adds a postscript to his letter, stating, in terms of the strongest indignation, that he finds he has been deceived by the Ostend captain, and that he will be detained two, perhaps three, days longer in port. Being separated from his companions, who had reluctantly parted from him some three weeks before, and all hope of escape in a sailing vessel from a city in which he must have felt himself a friendless stranger, being defeated by a change in the wind, he reluctantly overcame his scruples to a more costly route, and took passage by the steam-boat to Dover. He reached London on the 27th, and cheered by the news that his relatives, of whom he had heard nothing for two months, were quite well, he remained for a short time in the city, and leisurely returned home early in the summer of 1832.

To the general reader, there can be little attractive in the chapter now concluded, though few can fail to admire the indomitable perseverance and conscientious earnestness with which Dr Reid strove to turn to the best account the opportunities for professional improvement which the liberality of his father afforded him in Paris; nor are the dissecting-room, the operating-theatre, and the infectious wards of a cholera hospital, such pleasant places even to the enthusiastic physician, that we are to count his faithful adherence to professional studies a thing of course, especially in a city so full of seductions as Paris. He was something more, however, than merely a patient and diligent student. Quiet and even reserved in manner, hating display, and undemonstrative to

strangers, those who casually encountered him gave him no credit for the quick sense of humour, the warm affections, and susceptible imagination which he possessed. We shall see fuller proofs of this as we proceed. His appreciation of humour survived all his sufferings and trials, and often flashed out most brightly, as frequently happens in genial and manly natures, when his state of health was most critical. His affections and the higher moral emotions ripened with his years and culminated on his deathbed. His early manhood, however, was not unadorned by them. A sentence from the letter to his brother-in-law, Mr Taylor, from which I have already quoted, will show that he could take interest in other things than anatomy. Referring to London, he says, "Long will I remember that while [near] St Paul's one night, I stood for a while admiring the vast fabric before me, faintly illuminated by the moon, so that its limits appeared undefined, leaving the imagination to exercise itself in filling them up—the far-famed bell tolled the hour, resembling the deep boom of a cannon, and producing an effect truly sublime." He was caught still more off the guard he generally placed over the display of his emotions on another occasion. When he first visited the great picture-gallery at the Louvre in Paris, along with his friend Dr Vose, he was so overwhelmed by the gorgeousness of the scene which suddenly presented itself, that his eyes filled with tears, and he remained for some minutes motionless, and unable to answer the questions which his companion addressed to him.

CHAPTER III.

DEMONSTRATORSHIP OF ANATOMY—PRESIDENTSHIP OF EDINBURGH MEDICAL SOCIETY—APPOINTMENT TO LECTURESHIP ON PHYSIOLOGY.

"At present anatomy, anatomy, anatomy, of man, dog, and bird, occupy so much of my time, that you must pardon me for being very dull: my head is full of the origin and insertion of muscles, and such names as trachelo-mastoideus, Cerato-chondroglossus, and Bucco-pterygo-mylo-genio-cerato-chondrocrico-thyreo-Syndesmo-pharyngeus. But this beginning is the worst part of the science, which after all is a most important and interesting one: I am determined never to listen to any metaphysician who is not both anatomist and physiologist of the first rank."

Thomas Lovell Beddoes.

Dr Reid had not long to wait before he found professional employment. In the autumn of 1832, cholera was devastating Great Britain, and fell with special severity upon the inhabitants of Dumfries. The resident medical men soon found themselves unable to cope with the rapid increase in the number of their patients, and four physicians, of whom Dr Reid was one, were sent to their aid from Edinburgh. The risks and horrors of this disease, which his Parisian experience had made so familiar to him, did not deter him from proceeding to the plague-stricken city; nor did an attack of inflammation whilst resident there, which greatly increased his peril, induce him to desert his post. All men fond of their callings are professionally courageous, even though in other relations timid and cautious. But to professional daring Dr Reid united, as the mournful sequel will most amply show, a rare amount of personal courage. He

arrived in Dumfries in the first week in October, and continued there for about a month. The following extracts are from two letters of this period:—

"*Dumfries, October* 7, 1832.

"My dear Father,—I bore the fatigue of travelling here nicely; and after three hours' sleep, I commenced my duties in one of the heaviest wards of the town. I was kept running about all that day, all night, and almost all next day, when I got to bed, and was allowed to sleep all night. I can't say that I felt much fatigued from all this. On arriving at Dumfries, I found everything in a most disconsolate state; almost all the shops shut, all business at a stand, grief and anxiety deeply imprinted on every countenance, and the minds of the people completely subdued and passive, implicitly obeying everything ordered. . . . I was enjoying excellent health till Thursday night, when I had a return of my old friend the inflammation, in a slighter form than the two former times, but which required bleeding from the arm and leeching for its removal.[1] I have been sitting up all afternoon and recovered my appetite, but I do not intend to go out till I feel perfectly strong, as our duty is now fortunately not nearly so severe; for instead of above seventy new cases a-day, we have only about thirty."

To Captain Johnson.

"*October* 20.

"The cholera has nearly disappeared here. We have only had seven cases for the last three days, so that we have scarcely anything else to do but to amuse ourselves. The magistrates, however, seem anxious that we should remain a few days longer, in case it should reappear, as it not unfrequently does in similar circumstances. The disease has been extremely severe here, and, considering the population of the place, it has been much more severe than in Glasgow, or even in Paris. It was terrible work for the first few days. It

[1] So far as I can learn, the illness referred to was an attack of peritonitis.

was truly the City of the Plague. Such dreadful scenes I should never wish to be again obliged to witness; and what aggravated in no small degree the miseries and horrors inseparable from the agonies and dying groans of so many sufferers, was, that the dread of contagion seemed to have torn asunder the social bonds of society, and the wretched victim had too often occasion to upbraid with his last breath the selfish fear of friends and even of his nearest relations."

Dr Reid returned home in the end of October, and spent the next two months chiefly at Bathgate, seeking in vain for professional employment, and anticipating nothing better when employment should come, than to enter upon the dull drudgery of a country Doctor's life, which for him, as we have seen, had no charms. Of this period of unwilling idleness he always spoke with regret, almost with horror. His sister remembers him, after an unsuccessful endeavour to find a sphere of labour, lying upon the sofa, sad and gloomy, for two days. The new year brought an unexpected and most welcome deliverance from this condition.

Early in January 1833, the large and flourishing School of Anatomy in Old Surgeons' Hall, Edinburgh, was so crowded with students from all quarters, that it over-tasked the strength and energies of its superintendents, Dr Knox and Mr Fergusson.[1] Proposals, accordingly, were made to Dr Reid, whose anatomical skill was already conspicuous, to become a partner in the School, which ended in his accepting the offer made to him. It came at a most acceptable time, for the arrangements with his partners were scarcely completed when a medical vacancy occurred in a village not far from Bathgate, and Dr Reid's relatives, to whom, naturally enough, the superintendence of a dissecting-room seemed a much less dignified and less respectable occupation than the practice of medicine in a rural district, were anxious that he

[1] Now Professor of Surgery, King's College, London.

should devote himself to attending patients, rather than to teaching anatomy. The following earnest remonstrance, addressed to his father, will show how decided his preference for the position of a teacher was:—

"*Edinburgh, February* 14, 1833.

"My dear Father,—I have this moment received Mr Taylor's letter intimating Dr Scrymgeour's death, and your desire that I should think of settling in Polmount.[1] I am sorry that our notions on that subject should differ so much. Since you have, with your usual kindness and good sense, left it, however, in a great measure to my own choice, I will take advantage of this, and state to you as plainly and clearly as I can the reasons that have induced me to persevere in my present views, and which render me so averse to settle myself in the manner which, I know, you so ardently wish. I regret exceedingly that I should be forced to the painful necessity of doing this; but I do it the more boldly on this account, that I know our object is the same, and that we only differ about the means. We are both equally anxious about my future prospects in life; but you think that these would be best secured by settling in Polmount, or some such like place, while I, on the other hand, believe not. Our education, our habits of thinking and acting, have been and are so different, that it is not at all wonderful that our notions of happiness should be at variance. I have been brought up, have been constantly taught to believe, that a man's (I mean a professional man's) happiness, respectability, and worth, depend upon the extent of his knowledge of his profession. Entertaining these notions, you can easily perceive that I should continue to give a decided preference to remaining in Edinburgh. I know from experience that if I was to settle in the country, I [would] make little or no improvement; while if I remain in town I am sure, from the constant

[1] Polmount is a small village, some three miles from Falkirk, and twelve from Bathgate.

collision of kindred spirits, to go on adding to my knowledge. If the present opportunity had offered itself a month ago, when my prospects of obtaining a situation in town were so dark, I would certainly have embraced it; but I can assure you that to force it upon me now, would completely damp my spirits. Mr Taylor seems to hint that you do not consider my present situation as very respectable. I would beg to inform you, that in the eyes of the profession, and in the eyes of the well-educated and respectable people of Edinburgh, a country surgeon would be placed far below me in that respect. My hours are short, and I have three months in the twelve to spend at Bathgate, or anywhere I choose. What more could I desire in that respect? Your affectionate son,

"JOHN REID."

He addressed a letter by the same post to his mother, less minute in details, but equally earnest in its utterance, and his parents contested the point no further with him. That he acted wisely in making the choice he did, few probably who have read the preceding pages will doubt, and those who may hesitate will be satisfied by the record that follows. Humble as was Dr Reid's estimate of his own abilities, and doubtful as he was of the commendations of others, his merits as an anatomist were so great, that before ten years, the unassuming anatomical tutor of the Edinburgh medical students was known over Europe, as an authority in his favourite science. And years after, when the applause of this world had ceased to have any value in his eyes, and he knew that death was near at hand, and longed for release from agony, his conscience approved his early choice, and he continued, whilst he was able to occupy himself with worldly matters, to spend a portion of every day in reading works on anatomy, physiology, and natural history, or in tracing with the scalpel and watching through the microscope the curious structures of such rare animals as fell in his way.

The special office to which Dr Reid was called, in the

Old Surgeons' Hall School of Anatomy, was what is technically named Demonstrator of Anatomy. The duty of this teacher is to preside all day over the dissecting-room, where the students prosecute the dissection of the human body. A single body is allotted to ten students, and in a large dissecting-room there may be twelve, or more, such parties at work at once. The scene is one from which most who witness it for the first time shrink with horror, and to which some never can, by any effort, reconcile themselves. As those, however, who are in this latter case, cannot possibly prosecute medicine, the haunters of the dissecting-room are students who have become accustomed to all its loathsomeness and horrors, and whom conscientious devotion to study, relish for the science of anatomy, conviction that there is no other road to honest practice and professional eminence, dread of examination, or mere familiarity and indifference, have more or less completely reconciled to the unnatural atmosphere which they breathe. It is wonderful, indeed, how soon *busy* men grow indifferent to what seem, to unoccupied onlookers and idlers, intolerable or hazardous conditions. The coolest of all men in a formidable operation, is not unseldom the surgeon whose hand is at work. The least alarmed among the passengers of a swift railway train, is the engine-driver, who will suffer first and worst if any calamity occurs. Soldiers encamped on the battle-field long for the bugle-call which will exchange suspense and inaction for hand-to-hand fight, and garments rolled in blood. The coal-miner, bent only on hewing his day's work of coal, uncovers his safety-lamp, and perils his own life and that of hundreds. The chemist, engrossed with research in his laboratory, declares that the most noisome of gases, which to him is dear as the memento of important labours, has a most pleasant smell. We shall not wonder, therefore, that Dr Reid spent the whole day happily in what a Sanitary Commissioner would have justly called a crowded, ill-ventilated, pestilential charnel-house.

The duties of a demonstrator are unlike those of the more formal lecturer, who, provided he has prepared himself for his day's lecture, may, to a great extent, ignore all study that does not bear upon it, and with special emphasis say, "Sufficient unto the day is the evil thereof." The demonstrator, on the other hand, must be a walking dictionary of all anatomy—ready to be consulted at a moment's notice on every possible question in the science, and expected to give an immediate reply. Only a thorough anatomist, accordingly, can be a demonstrator. His daily teaching of others, however, is the best teaching of himself; and it will readily be believed that if Dr Reid was an admirable anatomist when he entered on his office in 1833, he might have said when he laid it down in 1836, that the body was for him as if made of glass, through which he could gaze with a waking clairvoyance, and trace within the transparent limbs the central bones, the surrounding muscles, and every blood-vessel and nerve through all its wanderings.

His duties in the dissecting-room brought him much in contact with the students, who showed their appreciation of his services as a teacher, by presenting him with a piece of plate at a public supper. But better testimony to the value of his labours as a demonstrator of anatomy, is to be found in the judgment passed upon his method of instruction by anatomists and physiologists now or recently teachers of Dr Reid's favourite sciences, who were formerly his pupils. Dr David Skae thus writes me concerning his friend:—"He was the most painstaking demonstrator I ever knew or heard of. No 'grinder' paid by the hour could have displayed more patience, or taken more trouble to make anatomy easy to the meanest capacity. Where he might have contented himself in the discharge of his duty, by a bare demonstration and description of the parts, he seemed to be animated by a sincere purpose of stereotyping his lesson on the memory and understanding of the dullest of his audience. His patience with those who wished to learn had no limit.

While he was thus kind and indulgent to those who stood in need of such aid, he was no less ready at all times to tilt and tourney with the most intelligent of his pupils, on doubtful points of physiological science. Transcendental anatomy and materialism had at that time a kind of second birth in the Edinburgh Medical School, and John Reid, a staunch conservative in all that related to his science, gave battle over every inch of ground occupied by his opponents. Many an hour did the dissecting-room echo to eager disputes on the vitality of the blood, the vital principle, the doctrines of materialism, and the functions of the nervous system. For three years I was in almost hourly intercourse with Dr Knox's pupils, while Dr Reid was his demonstrator, and I state confidently that, by each of them, he was looked up to with affection and esteem as the embodiment of all that was upright, honest, and honourable." Professor John Hughes Bennett has put on record his opinion in the following terms:—"I first knew Dr Reid in 1833, at which time he was demonstrator to Dr Knox, who had then one of the largest anatomical classes ever formed in this country. It was Reid's habit to remain in the dissecting-room daily, from nine in the morning till four in the afternoon. At one o'clock he gave a demonstration at one of the tables on some dissection that happened to be made by a student.[1] We used to crowd round him and ask questions on any point that was not thoroughly understood; but this was very seldom necessary, for such was the order, clearness, and minuteness of his description, that the subject was indeed made easy to the dullest comprehension. That kind of instruction, also, which with him, as with every great anatomist of this country, sought for illustration in those points bearing on surgical or medical practice, was never lost sight of; and I

[1] A demonstration, in the language of the dissecting-room, is a colloquial lecture on some part of the human body, which has been carefully dissected so as to display its component structures.

for one, up to this hour, and I firmly believe on this account, have never forgotten his admirable demonstrations."[1]

After discharging for three years the duties of Anatomical Demonstrator, Dr Reid was unexpectedly and reluctantly summoned, by the unanimous call of his brethren in Edinburgh, to undertake the higher duties of Lecturer on Physiology in the Extra-Academical Medical School. But before referring to him as a public prelector, I have to consider more fully how he spent the interval between 1833 and 1836. The medical academic session extends, with brief interruptions, over nine months of the year. Three months were thus nominally free to the Demonstrator of Anatomy. Practically, however, the session, which formally commences in November, begins in October, and from that period onwards to the end of July, with the exception of short vacations at Christmas and in April, the greater part of the day was spent by Dr Reid in the dissecting-room. The evenings throughout the year were at his own disposal, and, as a general rule, were divided between quiet study at home and attendance at the meetings of certain scientific societies, to which more special reference will presently be made. Dr Reid resided at this time with a widowed sister, who has kindly favoured me with some particulars as to his habits at the period under notice. His tastes were very simple. The plainest diet contented him; but he qualified the declaration of his willingness to be satisfied with the most frugal fare, with the reservation that he must have *books;* "anything that would satisfy nature—and books." His fatiguing duties in the dissecting-room prevented him studying through the day, and he early acquired the habit, which he never afterwards relinquished, of sitting up late to study, taking a pipe of tobacco (to which, however, he was no slave) to prevent drowsiness. When I last saw him in May 1849, three months before his death, he said, in reference to the nocturnal

[1] Monthly Journal of Medical Science, April 1850.

studies, which, so far as illness permitted, he still kept up, that he had always been fittest for work when other people were going to their beds. He read much during these vigils, chiefly scientific treatises, not, however, to the exclusion of works on literature.

His sister, to whom he was much attached, thought that his residence in Paris had lessened his religious earnestness, and expressed to him her regret at this, adding, that he used to read his Bible. Her brother, who was always honest in his utterances, and never pretended to feelings which he did not entertain, told her in reply, that by-and-by he would take to reading the Bible again, but that in the meanwhile he was working for distinction, on which he had set his heart. It is remembered amongst his medical friends that on one occasion a discussion about some religious point occurred in his room, to settle which a Bible was sought for, but for some time in vain. At last it was found covered with dust behind the other books on his library shelves. It was far otherwise at a later period.

A portion of two or three evenings every week during the winter six months was spent at the meetings of the Royal Physical, the Royal Medical, and the Anatomical and Physiological Societies of Edinburgh. These institutions, and certain kindred ones, form the schools in which the professors and lecturers, and, to a great extent, also the clergymen and lawyers of Edinburgh, are trained to the difficult art of public speaking. Attendance, accordingly, on their meetings formed one of the best preparations for the office of public lecturer on which Dr Reid was about to enter. Our Universities have been contrasted to their disadvantage with those on the Continent, and especially with those of Germany, because they make no formal provision for training young men for the office of lecturers or professors. There may be truth in this remark, especially in reference to Scotland, so far as chairs of mathematics, natural philosophy, the classics, and certain special branches of knowledge, are concerned. But

it cannot be urged with any justice against the medical authorities of our Universities (especially those of Edinburgh), that they neglect to train their juniors to become their successors. There are always many more young medical men competent to undertake the duties of lecturers or professors than there are places for them to fill. The societies which have been fostered under the wing of the University have been the main cause of this. They were very numerous at the time of which I write; a different society, and sometimes two, meeting on every secular night of the week, not excepting Saturday.

The most famous of the Edinburgh University societies are the Speculative, the Royal Medical, and the Royal Physical. The first-mentioned consisted almost entirely of students of law, and members of the legal profession;[1] the second of medical students and medical men; the third, which was not exclusively a student or university society, formed a common ground on which students of different professions met. I have heard Lord Jeffrey describe the early days of this society, when he and Lord Brougham tried experiments at its meetings, along with the young doctors and naturalists of their day. Similar reunions may still be witnessed at its meetings.[2]

I have already referred to the societies as training-schools in speaking. They are much more, however. "The prac-

[1] A well-known and very graphic description of some of the earlier meetings of the Speculative Society is given in "Peter's Letters to his Kinsfolk," and in one of the chapters of Lockhart's Life of Sir Walter Scott.

[2] Besides the societies mentioned in the text, there existed at the period of Dr Reid's residence in Edinburgh the Diagnostic and Dialectic, which were literary societies; the Hunterian Medical, whose objects were the same as those of the Royal Medical, but its fees less costly; the Metaphysical, which was not, however, founded till 1838; besides strictly professional or special societies, such as the Theological, the Juridical, the Botanical, which, unlike the societies mentioned above, aimed more at increasing the knowledge than training the faculties of their members. Most of the active students are members of two or three societies.

tice of essay-writing and discussion, among the finest and most congenial spirits of a college period thus brought together, evidently tends to stimulate inquiry, to give shape to knowledge, to create habits of business and public-speaking, and to call into play all the kindly and generous affections by which friendship is at once created and exercised. Many look back on such societies with gratitude, as schools both of the intellect and heart, and trace to them no small portion of their character, and of their permanent opinions."[1]

The truth of this description was fully realised in Dr Reid's case. The Anatomical and Physiological Society consisted of a small number of members; it was less constrained by formal rules than the larger societies, and was chiefly valuable as supplying a medium for the discussion by the lecturers, and their advanced pupils, of the more abstruse and recondite problems of anatomy and physiology.

The meetings of the Physical Society were very regularly attended by Dr Reid, but he did not often speak at them. They were the means, however, of introducing him to several able men, not members of the medical profession, whose friendship he highly prized. Among these were Mr William Ainsworth, afterwards Naturalist to the Euphrates Exploring Expedition, Professor E. Forbes, Mr Henry Cheek, and Mr Kenneth Kemp.[2]

[1] "Fragments of College and Pastoral Life," etc., by Rev. John Cairns. This work is a Memoir of the late Rev. John Clark of Glasgow, a distinguished student of the University of Edinburgh. It contains a striking description of Edinburgh College life, as it passed among some of the most earnest of Dr Reid's theological student-contemporaries. A very interesting account is given of the Metaphysical Society, which arose under the auspices of Sir William Hamilton and Professor Wilson, and was the training ground and battle-field of an unusual number of very clever young men, most of whom are now clergymen.

[2] I cannot name Mr Kemp without a passing tribute to the memory of that highly-gifted chemist, who, like his friend to whom this volume is specially devoted, was too soon cut off by a lingering and painful illness. Mr Kemp, who was almost entirely self-taught, united, in a rare degree, originality, ingenuity, and inventiveness, with constructive skill and manipulative dexterity. Had his erudition been equal to his qualifications in

The Royal Medical Society of Edinburgh, however, was the chief scene of those feats of intellectual gymnastics and gladiatorship by which Dr Reid acquired that acquaintance with his own skill and prowess, that confidence in his own capacity and resources, and that command of language, which secured him so high a place in the estimation of others, both as a teacher and a discoverer.

This society unquestionably is the most distinguished among the Student-societies of Great Britain devoted to the prosecution of science. It has existed for more than a century,[1] and during that period has numbered among its members the majority probably of the physicians, and many of the surgeons, of this country and its colonies. It possesses a large and very valuable library, and an income which enables it to make continual additions to its volumes. It has had vicissitudes, as could not but be expected in so lengthened a career, but in general it has been eminently prosperous, and at the period when I write it is about to erect a new edifice for the accommodation of its members and its library, and, to all appearance, is renewing its youth.

The great majority of the regular attendants at the meetings of the Medical Society are *bona fide* students, and an unrelenting system of fines compels their attendance, or atones for their absence by increasing the income of the society, and adding to the riches of the library. The fact

these respects, or had he prosecuted to a close the many novel trains of research which he opened up, or had he only published the many remarkable discoveries which he made, he would have occupied the highest place among our electricians and chemists. He could scarcely be persuaded, however, to use the pen, so that not a tithe of what he observed was put on permanent record, and his name in consequence "is writ in water." He did much, however; much more, indeed, than I believe is generally suspected, to foster the study of chemistry in Edinburgh; and many of his pupils retain, like myself, a very grateful remembrance of their obligations to him as a teacher. He was a warm friend of Dr Reid's, and always ready, as the writings of the latter show, to assist him in inquiries where chemistry could aid physiology.

[1] It was instituted in 1737, and incorporated by Royal Charter in 1788.

that a pecuniary punishment followed non-attendance on meetings of the society, or other infractions of its laws, might seem at first to imply that members were present only by compulsion, and were systematic law-breakers. The very opposite, however, was the fact. The attractions and advantages of the society were so great that all the more intelligent and earnest medical students of Edinburgh, unless where the comparative highness of the entrance-fees proved an obstacle,[1] sedulously attended its meetings, at which also, on occasions of special interest, the medical professors and lecturers of the University and Extra-Academical School, as well as the practitioners of the city, were present.

The active students willingly submitted to restrictions which they knew to be for the advantage of the society, and they took care that their less attentive brethren should attest their membership by their presence (unless when illness rendered this impossible), or by the proxy of one of her Majesty's coins. There was occupation for every one. The most ignorant or idle of students, however slow to open his mouth on questions involving a knowledge of anatomy, chemistry, or physiology, could give an opinion on a question of finance, and had clear enough views concerning the mode in which book-shelves should be arranged; and as an hour was devoted to private business, and silence was irksome, opinions were freely enough given. No doubt, it sometimes happened that proceedings, regarding the propriety of which there could be no hesitation, were not authorised till a lengthened debate had paved the way for the unavoidable decision

[1] The entrance-fees could not be considered excessive when contrasted with the permanent right to the extensive library of the society, which, after two years, every member acquired. It was only residents in Edinburgh, however, who could avail themselves of the library, and those students who had not the prospect of an abiding residence in the city, were frequently reluctant to pay the fees. I learn from Professor Simpson that both Dr Reid and he would have joined the society much sooner than they did had the fees been smaller; and this was the case with many others. Within the last few years the fees have been reduced.

which every one foresaw must be given. But after all, even a protracted discussion, such as I have been present at, as to the wisdom of whitewashing a dark and dirty wall, had the good effect of teaching deference to the opinions of others, and that submission to the vote of a majority, which for Anglo-Saxon minds is the "end of strife."

It may seem to unprofessional readers a needless matter to make so lengthened a reference to a single society. But those who know how great is the interest taken by the majority of the intelligent students of medicine in Edinburgh, in the Royal Medical Society, will not wonder at the special notice taken of it here. It is as truly an educational institution as the University or the Medical Schools. Its weekly meetings are looked forward to, and remembered, with the keenest interest. To be an office-bearer in it is a duty eagerly sought after; to be one of its four annual presidents is to reach a very high honour; and I question whether any dignity can compare in the eyes of a medical student with that which attaches to the office of senior president. I have seen tears shed at the loss of a presidentship, and the whole student-world is in commotion for days before the annual election.

Dr Reid was one of the presidents for the session 1835-36.[1] Like most other presidents of the society, however, it was as an active member that he chiefly distinguished himself. In the kind of eloquence required for a brilliant inaugural address on first taking the chair, he was excelled by others; but in the vigorous debates which the actual scientific business of the society called forth, he occupied a foremost place. Each member is required to read an essay on some medical ques-

[1] The other presidents for the year were Dr J. Y. Simpson (*sen. pres.*), Dr Martin Barry, and Dr J. H. Pollexfen. In the succeeding session the senior president was Dr W. B. Carpenter; his colleagues were Drs J. R. Cormack, G. Charlton, and J. Hughes Bennett. The society was thus peculiarly rich in good anatomists and physiologists at the period referred to in this chapter, and no doubt frequent intercourse with them increased Dr Reid's devotion to his favourite studies.

tion—a liberal interpretation being put upon the word medical, so as to include purely anatomical, physiological, and other scientific subjects. A copy of this essay circulates among the members for several days before it is read, so that all who please may make themselves masters of the author's views, and prepare themselves for defending or opposing them in the debate which always follows the reading of the essay. As the subjects (selected by a committee appointed for the purpose) are chosen so as to secure the discussion of vexed questions, it rarely happens that the debate flags; and on special occasions, where sides are keenly taken, or senior members engage in the proceedings, the scene presented is one of the most animated description. On such occasions Dr Reid was often pitted against most able debaters, many of them possessed of much greater natural fluency, and of longer experience as public speakers, than himself; but on subjects which fell within his own province, he kept his ground against them all. The following graceful tribute to his powers is from the pen of Dr Carpenter, Professor of Medical Jurisprudence in University College, London, one of the most eloquent and accomplished of his friendly rivals in the society, and, like Dr Reid, devoted to the study of anatomy and physiology:—

"The writer's acquaintance with Dr Reid commenced during the session of 1835-6, in which he was one of the four presidents of the Royal Medical Society of Edinburgh. . . . In the debates of the society, especially when they involved questions of anatomy, physiology, and pathology, Dr Reid took a prominent part; and the writer would not be doing justice to his own feelings, or to his friend's memory, if he did not bear tribute to the accuracy of information, clearness of perception, and logical precision of reasoning, displayed by Dr Reid upon every subject he grappled with, which were almost invariably such as to bear down all his opponents (among whom the writer, trained as he had been under different teachers, was not unfrequently ranked), yet with such

perfect *bonhomie*, and with such obvious desire rather for the attainment of truth than for any personal victory, that it was impossible for those most discomfited by his arguments to have any other feeling towards him than that of respect for his abilities, and high regard for his mode of using them."[1]

This is high praise, but those alike who know Dr Carpenter's impartiality as a critic, and those who were Dr Reid's fellow-members in the Medical Society, agree in acknowledging the justice of this estimate. It would be easy to adduce evidence from other quarters to the same effect, but it is unnecessary. The largely-signed requisition to Dr Reid to become a lecturer on physiology, which was addressed to him a little after the period to which Dr Carpenter refers, is the best testimony to the place he had won for himself in the estimation of his associates. The Royal Medical Society, however, was not the only arena where he distinguished himself. Before the close of 1836, he had published several papers containing important observations in anatomy and physiology. From the moment, indeed, of his entrance on the duties of his demonstratorship, he kept a careful record of all the peculiarities observed in the bodies dissected in his presence. His observations of these supplied him with materials for two papers, which were published in 1835, and referred to certain curious structures observed in connection with the veins. One of these papers was read to the Medico-Chirurgical Society of Edinburgh, which I have not referred to before, as it is not a student's society, but only attended by practising surgeons or physicians. In 1835, also, Dr Reid published a paper on the organisation of certain glands in the whale, and on some peculiarities in the internal arrangement of the blood-vessels of man in early life.

We may fitly pause here for a moment before considering Dr Reid in an entirely new position. By a process of the

[1] British and Foreign Medico-Chirurgical Review, October 1849, p. 577.

most natural growth, he had slowly risen from the position of an obscure medical student, nameless among a crowd, with rural shyness, and perhaps even awkwardness, about him, to the titles of Surgeon and Physician, the responsibilities of an hospital clerkship, the engrossing duties of a teacher of practical anatomy, the honours of presidentship over an influential professional society, and the reputation of an author. By nature he was neither vain, proud, nor ambitious, and he was more than satisfied with the place he had attained. New honours, however, awaited him.

Soon after the close of the winter session of 1835-6, a very gifted and accomplished man, Dr Fletcher, lecturer on Physiology in the Extra-Academical Medical School of Edinburgh, died after a very short illness.[1] Dr Reid was invited

[1] Dr Fletcher's name has passed into premature and undeserved oblivion. His strength lay in gifts and accomplishments in many respects the very opposite of those of his successor, and his reputation depended more upon his skill as a critic and expositor than as an original observer. If I may be allowed, however, to give an opinion on the merits of a physiologist, I would say that Dr Fletcher is entitled to a high place as an authority and original writer on all those difficult but important subjects, which belong to the border-land where physics and metaphysics meet, and appear to shade into each other. I shall never forget the pleasure, shared by many others, with which I listened to his discussion of the rival theories of life, and of kindred topics; and more than one metaphysician has thanked me for introducing him to a knowledge of Dr Fletcher's "Rudiments of Physiology." His fondness for the older writers led him to under-estimate contemporary authorities,—at least those who wrote on physics. He rejected, or at all events valued almost at nothing, the services of chemistry as one of the pillars of physiology; and he attached less importance, than by present universal consent should have been assigned, to those microscopic investigations which have added so much to his favourite science. He did this, however, more because he had not minutely studied the later progress of departments of physical science, which had comparatively little interest for a mind loving more what occupied the intellect and excited the imagination than what merely exercised the senses, than because he had thoroughly investigated and found useless the branches of knowledge which he passed by. The astonishing progress which these sciences have made since his death, has antiquated, beyond the hope of revival, much of his book. But no chemical or microscopical discoveries can much, if at all, affect such questions as, What is Life?—What is the relation of Life to

and urged to become his successor in circumstances singularly creditable to all the parties concerned. By the term, Extra-Academical Medical School, is signified the aggregate body of teachers of medical science, who are not professors in the University. They are rivals of the professors to this extent, that medical students would have no choice but to attend the University, if no private medical school existed. Otherwise, however, there is not necessarily any rivalry between them; and, practically, it has never prevented the most cordial friendship between professors and lecturers, where there was congeniality of feeling to beget mutual esteem. Nevertheless, it is certain that where there are two teachers of a single branch of knowledge, which all professional students must imperatively study, every pupil gained by the one is lost to the other; and it cannot be considered a part of the duty of a professor, either to himself or to the University, to take an active part in filling up a vacancy in the private

irritability, sensation, thought, and the like? On these and corresponding topics, Dr Fletcher's "Rudiments" will always amply repay consultation. I may add, for the sake of general students, that his work, although intended for professional men, is delightful reading. The author would have been considered a ripe scholar even at the universities where scholarship is most prized. The Greek, Latin, and English classics seemed stored up almost entire in his prodigious memory. Shakspeare, in particular, I imagine he knew by heart. From such a well of learning there were at all times dropping—sometimes flowing, sometimes gushing—the quaintest quotations, which were used in the most unexpected and felicitous way, to illustrate bare anatomical facts, or recondite physiological theories. He had much wit, and still more humour, and both were allowed free play. In a peculiar strain of polished subsardonic satire, in which a golden core of solid argument lay imbedded in a sheath of piercing steel, he made short work of his opponents; and even where the looker-on detected more of the steel than of the gold, he could not fail to be delighted with the skill of fence of the assailant. After a lapse of ten years, I have re-read the "Rudiments of Physiology" with renewed delight, though none are hit harder in it than the chemists. Dr Fletcher was fond of all the fine arts, and excelled as a painter. In truth, he was a man of rare cultivation, and as remarkable for his moral as for his intellectual and æsthetical character. It is always desirable to have at least a *few* such men in the ranks of a busy, practical calling, like that of medicine.

school, or to busy himself in calling into existence a new rival. Yet so conscious was Dr Reid of the liberality of feeling and unsordidness of spirit of Dr Alison, the Professor of Physiology, and so anxious was he to avoid even the appearance of competition with one who had been so kind to him, that he would come to no conclusion as to occupying Dr Fletcher's place till he had consulted the Professor. The result of the consultation was foreseen by those who knew the parties. Dr Alison counselled Dr Reid to begin lecturing; and, that he might be legally qualified to become his rival, the Professor, in due time, proposed him as a candidate for the fellowship of the Royal College of Physicians of Edinburgh.

The requisition to lecture, which was the main cause of Dr Reid's becoming a public teacher, was an unsolicited testimonial to his fitness for the office, and to his modesty in appreciating his own abilities. It was a rare compliment; for the majority of the private lecturers of Edinburgh have elected themselves to the posts they occupy, and have only justified their self-election by their subsequent success or ability as teachers.

The requisition was as follows:—

"*Edinburgh, May* 18, 1836.

"Sir,—By the much-lamented death of Dr Fletcher, an important vacancy has occurred in the Extra-Academical Medical School of Edinburgh; and, from the ample opportunities which we have had of judging of your talents, acquirements, and fitness in every respect to lecture upon the Institutes of Medicine, we respectfully, but earnestly, request that you will comply with our wish, and deliver, during next session, a course of lectures upon that branch of medical science. By so doing, we feel convinced that you will increase the reputation of this city as a school of medicine; the zeal and success with which you have hitherto prosecuted physiological investigations being already well known to the

public. We are, sir, with much esteem and respect, your obedient servants,

"JOHN H. POLLEXFEN, M.D.
WILLIAM B. CARPENTER, M.R.C.S.
JOHN ROSE CORMACK.
JOHN F. MACFARLAN.
W. HENDERSON, M.D.,

and eighty-one others."[1]

To the deputation that presented the above address, Dr Reid returned the following answer:—

To Drs Pollexfen and Henderson, and Messrs Carpenter and Cormack.

"GENTLEMEN,—To be thought worthy of so very flattering a testimonial of your esteem and regard, as the requisition you presented to me contains, would have afforded me the purest satisfaction and delight, were I not conscious that in it you have formed far too favourable an opinion of my acquirements. I assure you, gentlemen, that the idea of commencing a course of lectures on Physiology next session never once crossed my mind, until it was forced upon me by frequent solicitation; for my attention has for some time past been more closely directed to anatomical than to strictly physiological pursuits.

"It is with the greatest reluctance that I have come to the resolution of agreeing with your request, not because I do not keenly feel the most ardent anxiety to retain your esteem, and of aiming at the honourable distinction which it holds out, but from a deep sense of my own imperfections. In entering upon this important duty to which you have invited me, I shall endeavour, by the most strenuous exertions in the cultivation of this branch of medical science, and by my professional and public conduct, to render myself, as far as

[1] Medical Times, Jan. 1851, p. 43.

I possibly can, worthy of this distinguished mark of your approbation. I have the honour to be, gentlemen, your most obedient servant,

"JOHN REID."

"31, *Buccleuch Place, May* 23, 1836."[1]

In reference to this appointment, Dr Reid wrote as follows to an intimate friend:—

"*September* 4, 1836.

"Perhaps you may have heard that I intend lecturing next session myself upon Physiology. What strange things do sometimes occur within a very short time! I had just as little thoughts of lecturing on that or any other subject a few months ago, as I had of going to the moon. However, after Dr Fletcher's death, and it was determined that Dr A. Thomson was to leave Edinburgh next winter, I was invited, by a requisition from the students, to lecture on that subject. I have reluctantly complied, and not before asking Dr Alison's advice. I thenceforth give up everything else, and devote my whole attention to Physiology, so that I hope in a short time to make up any deficiencies with which at present I may be justly chargeable."[2]

To complete the pleasing record of kindly dealings towards Dr Reid, it remains to add, that he was welcomed to his lectureship by the late Dr John Mackintosh, the head of the private School in which the vacancy had occurred. Dr Mackintosh was a keen medical polemic, though in many respects a man of liberal feeling, as he showed on this occasion. He had given a public lecture containing what Dr Reid and many others believed to be an inaccurate account of the laws regulating the circulation of the blood within the skull. Dr Reid, accordingly, prepared a paper, to be read at the Medical

[1] Op. et loc. cit. [2] Medical Times, Jan. 1851, p. 43.

Society, assailing the unorthodox doctrines; and, at his request, Dr David Skae conveyed to Dr Mackintosh "a challenge" to meet his principal at the society, and contest the disputed point with him. The anticipated duello excited great interest, but, unfortunately, a sprained ankle confined Dr Mackintosh to the sofa, and he was reluctantly compelled to content himself with sending, by Dr Skae, a frank and courteous letter, explaining that only his illness prevented him from meeting his opponent. The contest proceeded in spite of the defender's absence, and was decided against him, both by default, and as most believed in conformity with the merits of the case; but this did not prevent Dr Mackintosh from welcoming Dr Reid as a colleague, and cordially introducing him to the students at the commencement of the ensuing winter session. The requisition to lecture was addressed to Dr Reid in May 1836. In August of that year he resigned his partnership with Dr Knox; in October he became a Fellow of the Royal College of Physicians; and he commenced to lecture in November.

I close this chapter with an estimate of Dr Reid's character as it appeared at this period, to a very competent judge. James Clark, Esq., of Glasgow, who has drawn the following portrait, was an attached friend of Dr Reid, and a distinguished student of physiology. After becoming a surgeon, he abandoned medicine for a mercantile life, so that his judgment has the advantage of proceeding from one who had sufficient experience of the general character of professional medical men to enter into their peculiarities; and who has been so long removed from a personal interest in medicine as a vocation, that the *idola* and the *opprobria tribus* have equally ceased to bias his opinion. I applied to him because he had long been known to me, and to our mutual friend, Dr Skae, as very skilful in the analysis of character, and as largely possessed of that affection for the object of his present analysis, without which no one can justly judge another.

"It is now," writes Mr Clark, "upwards of fourteen years

since I had the happiness of personal intercourse with the lamented subject of your projected Memoir. I have met him twice, or at most thrice, within that long period, renewing, on these occasions, the eager delight with which I formerly associated with him. We never corresponded. Our avocations were too dissimilar, after I left Edinburgh, to render the interchange of opinion in that way of much profit, probably, to either. You must, therefore, make all due allowance for the *effacing* influence of many years' separation. Impressions of character become faint,—points and traits once clear and well marked, are apt to *run* into others; and you will not wonder that I have far more difficulty *now* in satisfying myself what were the real characteristics of Dr Reid's moral and mental nature, at the period of my acquaintance with him, than I could have had immediately after enjoying his conversation.

"When I knew Dr Reid, the strictly Baconian bias of his philosophy seemed to me almost to have communicated itself to his feelings; perhaps it would not be too much to say, that he loved and hoped *upon principle*,—that principle being the well-known one of Jeremy Bentham. I am profoundly convinced that the *structure* of his moral sentiments was eminently *honest*. All make-believe, shuffle, false professions, and the 'thousand and one' forms assumed by insincerity, were unknown to Dr Reid. I don't imagine he *despised* falsehood so much as he failed to *realise* it, and when he perceived it in others, he animadverted upon the exhibition with an easy good-natured joke, devoid of all bitterness.

"I do not think he was proud or ambitious,—vain he certainly was not. His mental powers may fairly be said to have been of a high order, that is, *solid* but not *brilliant*. His deficiency of imagination, in my humble view, precludes his being ranked among the children of genius. If I ever thought Dr Reid uncharitable, it was when he bore down in ridicule upon the gorgeous *scientific poetry* which sparkled in the reflections of some of his gifted contemporaries. He

did not *understand* the metaphysics of science any more than its poetry; he travelled by 'easy stages,' counting every pebble on the road, scarcely ever lifting his eye to the glorious scenery around him.

"In part this circumscription was owing, I think, to the nature of his chief daily labours. Teaching students to follow arteries to their ramifications, count 'processes' of bone, and peep through 'foramina,' is, perhaps, calculated to dull the excursive faculties,—to *materialise the mind*, if I may, with propriety, use that expression. Dr Reid was not quick at seeing analogies; he saw the thing itself with wonderful minuteness,—to employ the terms of his own favourite science, he saw the *origin*, *course*, and *insertion* of every fact which he studied; but he saw not so readily the mutual dependency of facts—that beautiful chain of *amalgamated* truth known as Nature. He was a fine *natural* logician; he could detect a scientific sophism however cleverly concealed, and had the patience of a true philosopher to await the development of a system, rather than *fancy* it perfected."

CHAPTER IV.

CHARACTER AS A LECTURER—PATHOLOGICAL APPOINTMENT IN THE EDINBURGH INFIRMARY—ELECTION AS A PROFESSOR BY THE UNIVERSITY OF ST ANDREWS.

"There never, indeed, was a man of learning and talent who appeared in society so perfectly free from all sorts of pretension or notion of his own importance, or so little solicitous to distinguish himself, or so sincerely willing to give place to every one else. Even upon subjects which he had thoroughly studied, he was never in the least impatient to speak, and spoke at all times without any tone of authority; while, so far from wishing to set off what he had to say by any brilliancy or emphasis of expression, it seemed generally as if he had studied to disguise the weight and originality of his thoughts under the plainest form of speech, and the most quiet and indifferent manner: so that the profoundest remarks and subtlest observations were often dropped, not only without any solicitude that their value should be observed, but without any apparent consciousness that they possessed any."—*Lord Jeffrey's Character of Professor Playfair.*

"PHYSIOLOGY," says Dr Fletcher, "may be defined to be the science of those actions of organised beings in which life consists; in other words, the Science of Life." It is perhaps the most difficult of all the branches of knowledge included in the circle of medical study, if not to learn, at least to teach. Its two main pillars, considered as a physical science, are anatomy and chemistry. Anatomy explains the form and structure of all the organs and tissues of plants and animals, including their minutest formal components. Chemistry explains of what ingredients, or elements, animal and vegetable solids and fluids consist. The one science analyses an organised body by the scalpel and microscope into bones, muscles, nerves, blood vessels; or into roots, stems, branches, leaves, flowers; and all of those further into their smallest

discernible constituent fibres, cells, and molecules. The other analyses organisms by the retort, crucible, and combustion-tube into starch, sugar, fibrine, albumen, gelatine, bone-earth; and these again into lime, magnesia, phosphoric acid, iron, charcoal, oxygen, hydrogen, nitrogen, and the like; down to the simplest ingredients or elements which chemistry at present acknowledges. These sciences deal, however, only with the dead body.

As the science of life, physiology has specially to consider certain forces found at work only in plants and animals before death, and named distinctively *Vital*. They are a class of agencies extremely difficult to investigate, from their acting in living bodies, side by side with the forces found solely operating in dead matter; and from the impossibility of subjecting living beings to experiment without risking the destruction or derangement of the vital forces, by the unavoidable interference with their normal action, which experiment necessitates. Moreover, what is *vital* in any single function or phenomenon, such as the respiration of an animal and the flowering of a plant, or the high temperature of the blood and the rapid motion of the sap, can only be determined after all that is merely physical or non-vital has been ascertained and allowed for. Thus, in respiration, whatever is referable to the chemical action of the inspired air on the blood which it encounters and saturates in the lungs, and on the tissues of the body through which that aërated blood flows, must be explained by a reference to chemical laws. Whatever, also, in the machinery of respiration, is referable to those laws of mechanics, hydrostatics, hydraulics, and pneumatics, which determine the properties and movements of levers, the mutual action of liquids of different densities, the motion of fluids in tubes, and the production and conditions of a vacuum, must be assigned to such mechanical forces before vital agencies can be appealed to. It thus happens that the physiologist must be largely acquainted with physics, and therefore more or less with

statics and dynamics in all their divisions, with heat, light, electricity, chemistry. As physiology, likewise, even if studied with a view only to its practical application to the relief of disease in man, cannot be properly pursued without a wide acquaintance with the structures of the lower animals and of plants, so the physiologist must be a diligent student of natural history and of botany, in the fullest sense of these terms. Further, it is not only in the pages of death, but also in those of disease, that the history of life is written. Disease is the perversion, rather than the reversion of health. The sick body is not deserted by its natural or normal forces, and possessed by unnatural morbid ones; but the natural forces are working wrongly, some too feebly, others too powerfully, so that the nicely balanced equilibrium of opposing agencies in which health consists, is overturned. The sick man's frame is like a clock keeping false time, not because any new forces have usurped the place of cohesion, gravity, elasticity, or inertia, and held back or pushed on the hands on the dial; but because the altered length of the pendulum, or the diminished elasticity of the spring, or the increased friction of the pinions, has changed that relation between the weight, inertia, and momentum of the component parts of the machine, which is essential to its being a true chronometer. And exactly as the movements of certain portions of an engine can be best seen when it is moving slowly, and the movements of certain others when it is moving swiftly, so the characteristic actions of living organs are often most surely ascertained by watching them when morbidly slow or rapid in their action. The pantings and convulsive struggles of a sufferer from asthma, show most vividly the power of the muscles by which we breathe. The throbbing pulse of high fever, exaggerates in a striking way the natural action of the blood vessels. The sickening palpitations of the invalid from heart-disease, best demonstrate the use of the valves which in him are deranged. The cold and powerless limbs of the paralytic, teach the true use of

the nerves, which are the seat of his malady. Nor is there any disease which does not carry with it a lesson as to the nature of the function which it disturbs.

Again: it is by its own living actions that the diseased body cures itself, if it is cured at all. The assuaging of a fever, the disappearance of a dropsy, the closing of a wound, and every other healing act, though it be but the departure of a headache, or the stopping of a leech-bite, is the putting forth of a living power most instructive for the physiologist. He must therefore haunt the hospital, watch at the sick man's bedside, stand by the operating surgeon, trace every step of recovery, and every stage of decay; and, when death has done its worst, attend with all the appliances of his science, to connect the morbid appearances of the dead body with the symptoms of the living sufferer.

Lastly, the physiologist has to deal not merely with living, but likewise with sentient and thinking beings, and must rise from the domain of physics to that of psychology. Sensation, emotion, reason, volition,—in a word, mental action in all its phases, must be to him objects of careful study, both in themselves, and still more in connection with the brain, nerves, and other organs through which they are manifested. He must thus be a metaphysician as well as a physicist; and all the strange phenomena of somnambulism, animal magnetism, and the like, must be watched and registered, and interpreted. It is no light task then to engage to teach physiology. A long lifetime would not exhaust its round of study, and Dr Reid was only twenty-eight years of age, and but six years a Doctor, when he was summoned to teach it. Let us see how he was furnished for the task, and what he did to extend the science.

It was not necessary that he should immediately realise the ideal of an all-accomplished physiologist which has just been sketched. His lectures were to be addressed to an audience of students of medicine, to the great majority of whom physiology was only interesting in so far as it bore

upon the practical duties of their profession; and he was abundantly qualified to become the instructor of such an audience. How profound his acquaintance with the anatomy of the healthy human body was, we have already seen. With its diseased structures, he was also, though necessarily to a less extent, familiar; but an appointment which he received in the Royal Infirmary, at the close of his third session as a lecturer, secured him the amplest opportunities for studying pathology, of which, as we shall presently see, he fully availed himself. In chemistry, which has always been a favourite study with the Edinburgh students, Dr Reid was a creditable proficient. His able and willing friend, Mr Kemp, was likewise at hand should any physiological problem demand special chemical illustration, and several of his intimate associates, especially Dr Percy,[1] were devoted to physiological chemistry. The services, moreover, which this science can render to physiology, were much fewer in 1836 than they became in the short space of four years, when the publication of the first of Liebig's systematic works showed how extensive is the domain which recent chemistry claims within the ample territory owned by physiology.

In psychology, Dr Reid had made himself familiar with those branches most closely bearing on his science. Dr Alison's lectures on these departments were peculiarly valuable, in so far as the practical relations of medicine were concerned, and Dr Reid taught psychology in the same spirit. The claims of phrenology, also, was a frequent and favourite subject of discussion at the meetings of the Medical Society, and in other professional circles in Edinburgh; and the whole question of materialism, including all the disputed points connected with the functions of the brain, were often debated by the hour. But withal, the psychological department of physiology was not that in which Dr Reid felt most at home,

[1] Formerly Lecturer on Chemistry in Queen's College, and assistant Physician to the Hospital attached to it, at Birmingham; now one of the Chemists attached to the Museum of Economic Geology, London.

nor did his cast of mind peculiarly qualify him for occupying new ground in metaphysical inquiry.

With the other branches of knowledge needful for a physiologist, Dr Reid had some considerable acquaintance, and with conscientious perseverance he devoted himself to the fuller study of those which he knew least, or thought most important. Altogether, if we consider his years, his previous studies, the quality of his intellect, the patience and perseverance of his character, his intense love of truth, and his success in discovering it, the opportunities which Edinburgh afforded for progress in his favourite studies, the youthful character of the greater part of his audience, and the comparatively limited range of inquiry which it was necessary to bring before them, we shall augur for him great acceptance as a teacher. A large collection of paintings in oil, which Dr Fletcher had executed for the illustration of his lectures on physiology, and a sufficient museum, came into the possession of Dr Reid, and thus furnished with the necessary *matériel*, he commenced to lecture in November 1836.

I was one of the large audience present at his maiden lecture. It was grave and earnest, in keeping with the character of the author and the expectations of his friends, and full of the promise which his future progress amply realised. A first lecture is a trial of courage to the boldest man, who has any misgivings as to his own powers, any sense of the magnitude of the subject on which he has to prelect, and any respect for the critical sagacity of his audience. Dr Reid declared of his own feelings at his first lecture, that he had not distinctly recognised the features of a single countenance among the many well-known and friendly faces before him. His course of lectures, which extended from November 1836 to April 1837, comprised 110 lectures; and he commenced with a stock of thirty written out.[1] This may seem to general readers but a small supply for a win-

[1] Medical Times, Jan. 1851, p. 44.

ter's course; and if the five months that had passed from the period when Dr Reid had engaged to teach physiology, had not furnished a third of the requisite number of lectures, it might seem hopeless that the remaining eighty should be produced within the succeeding five months. I venture, however, to say, that if Dr Reid had been tried by a jury of lecturers, he would have been dismissed with the highest certificate of merit. Were our famous professors and teachers put upon their oath, many, perhaps most of them, would confess that they were thankful to find themselves provided with the introductory lecture which was to make or mar them, late on the night before its delivery; and that for every succeeding lecture they had left the morrow to care for itself. Nor need this procrastination be wondered at, or set down as an indication of indifference or idleness. Men are born poets, but not teachers; nor is there any other way of learning to teach than by teaching. Some few may have the power of calling before them an imaginary audience, to which they address their ideal lectures; but I question if there ever lived a man who delivered a course of one hundred and ten lectures to a spectral audience; and I am very certain that if there has been such a dumb speaker, he found, when he faced flesh and blood hearers, that he had a hundred things to alter. To concoct a series of lectures on any given subject, is what any clever man can do; but for the devoted and conscientious student of a great science, dreading that it will suffer by his inadequate representation of its greatness, and that the younger students who have trusted themselves to his guidance will not be taught to appreciate its importance, the preparation of a first course of lectures is no light or idle task. The prevailing feeling is, that there must be no haste in preparing notes or writing out lectures. A lecture is like a stereotype, on which few, and only *literal*, alterations are generally made; and the subjects of which the incipient lecturer knows most, are exactly those on which he longs for more knowledge. It is most natural, therefore, that he should delay writing on

his favourite topics, whilst he feels that he may learn so much more concerning them; and if this be the case with what he knows best, it is still more true of those subjects to which he has devoted no special study.

What has been urged will apply to any branch of knowledge; but it is peculiarly applicable to such a complement of sciences as we have seen physiology to be, and to such a thinker as Dr Reid. He was not by temperament or endowment volatile, versatile, or impulsive. When once set in action, he was like a great engine which has acquired such speed and momentum, that it can only be gradually brought to rest, and must be as gradually set in motion again. His practice, as I learn from more than one intimate medical friend, was to collect with great pains all the information which he could gather, on any subject which was to exercise his pen, and to leave the writing till close upon the time when it was absolutely required. He was slow indeed to begin writing; and let himself be pushed for time, so that the stimulus of necessity might urge him to the task. His habit at this period was to sleep after dinner for an hour or more, and then to betake himself to work, which he pursued till four, five, or six o'clock in the morning, smoking at intervals to keep away drowsiness. Those who have tried, know that it takes a long time to write what occupies a short time in reading; and physiology is not like anatomy or chemistry, in lecturing on which, the dissected body, or the various pieces of apparatus before the teacher, serve as notes, and most powerful mnemonics in suggesting and recalling the topics of lecture. Many, perhaps most, of the questions with which the teacher of physiology has to deal, are abstruse and not susceptible of much material illustration. They cannot well be taught by unpremeditated oral discourse, unless where the speaker has great natural fluency, which Dr Reid had not, and even then they are inferior in accuracy and comprehensiveness, to what they would have been if carefully thought out and written. It will readily be understood, then, that

Dr Reid underwent no ordinary labour during his first session. He thus refers to it in a letter written in April 1837:—"I embrace the first opportunity which presents itself, after bringing the labours of the session to a close, to assure you, that amidst all the hurry and bustle which I have been necessarily subjected to this last winter, I have not ceased to remember my old friends. I assure you that it was with no ordinary feelings of pleasure and satisfaction that I took leave of my pupils; for I had, for some time past, almost every lecture to prepare within the twenty-four hours. I did not grudge the labour; but of course I could not but feel keenly the unsatisfactory nature of such a mode of procedure, where I was obliged to proceed onwards, as one is whirled through an interesting country at railway-coach speed, without sufficient time for extensive or accurate observation. But I hope that I shall now have time to walk leisurely along, loitering when I list, where the spot is sufficiently attractive, and diverging from the more direct road to any neighbouring height which promises a more extensive and interesting view of the plains below."[1]

Dr Reid continued to lecture on physiology in Edinburgh till the close of the winter session 1840-41, when he became Professor at St Andrews. In 1838 he was unexpectedly summoned to give a course of popular lectures on physiology to the Edinburgh Philosophical Association,[2] in room of Dr

[1] Medical Times, Feb. 1851, p. 124.

[2] Now the Philosophical Institution. These lectures were undertaken in the following circumstances, as I learn through the kindness of Messrs Nichol and Bowie, Secretaries to the Institution. In September 1837, Dr Mackintosh offered to deliver, in conjunction with Dr Reid (whose consent, however, he apparently had not obtained), a course of twenty-five lectures on physiology before the Association, in the winter session 1837-38. The directors gladly accepted the offer; but in the beginning of October, Dr Mackintosh wrote again to say, that he had "been unable to prevail upon Dr John Reid to undertake any part of the course of lectures on physiology," and in consequence he engaged to give them all himself. Dr Mackintosh's death put an end to this arrangement; and then, after urgent solicitation, Dr Reid undertook to lecture, "provided the directors could find no other

Mackintosh, who died after a short illness in autumn 1838. In St Andrews, also, he gave a similar course in 1841-42. It may be well, therefore, once for all, to make a general reference to Dr Reid as a teacher and public speaker.

The rhetoric of the professor's chair and the scientific lecture-room has been less reduced to a common standard than that of the pulpit or the bar; partly, probably, because the great majority of scientific teachers have passed at once from their studies, or laboratories, or professional pursuits, to prelect *ex cathedrâ;* partly, also, because scientific men more rarely assemble to hear each other lecture, or to contend in oratory, than clergymen or lawyers do. The arenas, likewise, in which the preacher and the barrister exercise their rhetorical skill in the presence of their fellows, are, to a great extent, under the control of the seniors or superiors of their respective professions; and a certain traditional or conventional style of address is infallibly, and almost unconsciously, adopted by the majority. Moreover, lawyers practising in the same court, and clergymen or ministers, who are members of the same church or religious denomination, have each the same topics to deal with, and cannot fail soon to exhaust the varieties of style suitable for their callings, so that, with the exception of the few men of great genius who are an exceptional law to themselves, they fall into one or two prevailing modes of oratory. It is otherwise with the teachers of physical science. They are trained in no school to make their lessons convincing or attractive, except in debating societies, which cultivate rather a dialectic than a didactic style. They have no superiors or seniors to mould or control their oratory, and so far are they from mingling with their fellows, that in most Universities and professional schools there is but one professor or lecturer on each branch of knowledge, whilst in large towns, where there are several

person better qualified to treat the subject." The Association was not very prosperous in 1837, and remained dormant for some years. It revived in 1845, and has changed its title to that of Philosophical Institution.

teachers of the same science, they too often stand toward each other in the capacity of rivals, to profit by taking lessons from an opponent's style of lecturing. Whereas, moreover, the Scriptures and the Statutes supply, within certain limits, the same unchanging time-honoured texts to the preacher and the barrister, the physical sciences are every day changing, not merely by the discovery of new facts, but by entire remodellings of their fundamental doctrines. The all-acceptable professor of chemistry of 1800, whose notes contain no reference to voltaic decomposition, electro-magnetism, thermo-electricity, the atomic theory, the doctrine of compound radicals, isomorphism, and much more, would be unintelligible and unprofitable to the audience of 1850; and the physiologist of the beginning of the century would be not less unwelcome, because equally dumb on all those discoveries in reference to the functions of the nerves, the glands, the primary germs and cells of tissues, and much else, which have so greatly and so fundamentally altered the entire aspect of his science.

It thus unavoidably happens that there is more variety of style in public speaking, and less rhetorical skill, among teachers of physical science than among any other class of educated prelectors.

Two great styles, nevertheless, for they cannot be termed schools, of lecturing are predominant in our country. The one is professedly popular, the other professedly academic; and, singular as it may appear, the greatest proficients in interesting miscellaneous audiences in physical science are also the most acceptable to academic listeners. In proof of this, I need only refer to the past and present lecturers at the Royal Institution, London, at the head of whom stand Davy and Faraday, and to the ablest speakers at the meetings of the British Association. The multiplication of Mechanics' Institutes, Athenæums, and similar associations, has greatly increased the number of popular lecturers, the majority of whom, it need not be said, fall far short in excellence of the

illustrious men referred to. But I believe it will be acknowledged by all, that whilst there are many professors justly winning the warmest regards of professional students, but totally unacceptable to unprofessional hearers, and a very few popular lecturers highly acceptable only to the latter, it is not less true that when devoted students of science address themselves to the popularising of their own studies, they far excel those who take them up *only* to popularise them.[1] As for the merely popular lecturer, Thomas Carlyle has declared (speaking, too, of himself) that he is at best a compound of the priest, the prophet, and the play-actor; but in the case of the lecturer on physics, it may be added that he is too often a cross-breed between the play-actor and the showman. Dr Reid was of a different stock. He was, on the first occasion, a popular lecturer by accident rather than by design; and, on the second, more from the wish to serve his fellow-townsmen, and because there was almost no opportunity for exercising his office of university professor, than because he felt a call to appear before an unprofessional audience, or greatly relished the work. He was too earnest and modest to love display, too truthful to deceive his hearers into the belief that they could master all physiology by being inactive listeners to a few lectures, in which, of necessity, many departments of the science had to be left altogether unnoticed; and too shy and silent to find any pleasure in wasting their time in empty harangues. He greatly preferred a professional audience, and appeared to most advantage before it.

The academic or purely professorial style of lecturing is something distinct from clerical or forensic oratory, but in its best examples approaches much more closely to the latter than to the former. In Scotland, where the pulpit, including

[1] In proof of this I would refer to the Bridgewater Treatises, to Lyell and Sedgwick's Geological Works, to Airy and Herschel's Astronomies, and to Liebig's Familiar Letters on Chemistry, besides other productions, which are more intelligible, eloquent, and even fascinating works than many of the so-called popular treatises on the subjects of which they treat.

the platform, exerts so great an influence, it has created a standard of speaking, by which the majority of the public test all kinds of oratory, and medical lecturers have sometimes had reason to complain that they were compared to their disadvantage with highly popular clergymen. The exaggerated oratory which too much characterises the platform, with its extravagant deference to the audience, its simulated or overacted earnestness, and its eye to applause, is the worst model which a lecturer on physics could well set before him. And it can rarely happen that he has occasion, even remotely, to imitate the solemn fervour, and the appeal to the heart and conscience, which are so befitting in the preacher. He should combine, or rather alternate, the characteristics of the advocate and the judge. Professedly he is a teacher, but in reality he must, if he is to be serviceable to his pupils, possess in large measure other than merely didactic or preceptorial gifts. This is true of all scientific teachers, but specially of teachers of physiology. It is taught, not to tyros, but to students already familiar with anatomy and chemistry, and otherwise versed in the fundamental branches of medicine. A class of such students very much resembles a jury summoned to try a civil case. There are among them some few clever men and some few stupid ones, but the majority are not generally excessively remarkable either way, although possessed of endowments amply sufficient to enable them, if they choose, to master the subject they are all professedly studying. The temptation of a young lecturer is to address himself to the clever students, who are sure to appreciate him, and in whose eyes he desires to appear worthy of his vocation. They, however, are exactly the portion of his class which least needs his help. The stupid students, a very small minority, if existent at all, must be left to creep at their own pace, or be recommended to choose another calling; and if the teacher can persuade the incorrigibly idle, who haunt the back seats of every class-room, to refrain from any greater cause of annoyance to their more busy brethren and himself

than the drawing of his portrait, or the carving of their own names on the benches, he may be content. The majority of a class may always be safely assumed to consist of young men not extremely enthusiastic in the pursuit of truth, or disposed to take an enormous amount of trouble in following the lecturer, but quite ready to appreciate his efforts to make his science intelligible and attractive to them, and most quick to perceive and to recompense his endeavours to serve and assist them. Where the teacher, further, has a place among his peers as an authority on his subject, and shows, by his style of address, that his heart is in his work, and that he is thinking more of serving his class than of earning his fees, there are no bounds to the respect he will secure, and the enthusiasm he may awaken. Dr Reid was such a teacher. We have seen already that, as an anatomical demonstrator, he had acquired and displayed great didactic or preceptorial skill; and, where only exposition was demanded in his lectures, none could excel him. But his complex and difficult science often required him, like the counsel in presence of a jury, to lead evidence by no means unequivocal in its tendency; and, like the advocate, he had sometimes to press home upon his hearers, with all his earnestness, the conclusion which he wished them to draw from the conflicting proofs. And, most frequently of all, he had, like a judge, to sum up evidence before his jury-class, and warn them against extreme views in any direction, whilst he left the decision entirely with themselves.

It is a nice matter to determine whether the teacher should appear chiefly as the judge or as the advocate. Dr Reid, with his characteristic truthfulness and honesty, preferred generally the judicial function,—thinking that if the evidence in reference to a disputed question really preponderated in one direction, intelligent students could not fail to see this, and would attach more value to a conclusion they had drawn for themselves than to one forced upon them. There are some minds, nevertheless, which cannot draw, but can only

receive conclusions, and which, if left to themselves to judge of disputed points, arrive only at a negative scepticism. A practical calling, like medicine, has no room for professional sceptics, who must either be hypocrites or self-deceivers; whilst it must always expect a large number of its members to act only as rational empirics, and as imitators of the few leaders who can give a reason for their mode of procedure. Such persons must be treated like a jury, from whom a pleader, conscious of the justice of his case, insists on winning his verdict; and Dr Reid, exactly because he never displayed any anxiety to compel an acquiescence in his individual opinions, was peculiarly likely to secure this, when he earnestly urged on his hearers that but one of two competing views could be true.

A teacher who possessed the solid qualifications, as an instructor, to which I have referred, could afford to dispense with the minor graces of the orator. Dr Reid was not very fluent; but this is a small defect in a lecturer on physics, provided he is earnest, explicit, and clear. His elocution, also, was at first a little harsh, and to English ears somewhat trying; and it too much echoed a sonorous, but not very melodious or chastened, tone of Scottish pulpit oratory. This was specially apparent when poetical quotations, of which he was rather fond, were introduced; but after all it was a trifling blemish. The peculiarities of accent or elocution of a speaker are very quickly forgotten by those who listen to him from day to day, especially when his other qualities are such as to command the respect and attention of those he addresses. Latterly, there was no intelligent—still more, no scientific—audience, that would not have welcomed Dr Reid's addresses.

I now return to the events in his personal history from 1836 onwards, reserving for another chapter an account and estimate of his merits as an original observer in physiology.

The duties of lecturer occupied Dr Reid only during the winter session,—*i. e.*, from November till the close of April;

so that, although a considerable portion of the summer and autumn months was dedicated to the improvement of his lectures, a large period of time could also be devoted to special scientific study, and to original research. In both, Dr Reid largely and successfully engaged. The first fruits of his diligence and ability appeared in a very elaborate paper on the Anatomy and Physiology of the Heart, which was written in great part in 1836;[1] and in an experimental investigation into the functions of certain important nerves, of the first part of which an epitome was read by the author at the meeting of the British Association in September 1837.[2] These papers will be more specially considered in the next chapter.

In the spring of 1837, a formidable attack of bleeding from the lungs interrupted his lectures, and placed his life in imminent danger. The medical friends who were about him still recall the serenity, composure, and even cheerfulness, which he displayed during this illness. The following letter, referring to this attack, will give the reader some insight into the rare extent to which Dr Reid was endowed with that patient courage which is generally seen largely manifested only in the gentler sex: it also illustrates the power, as rare, of treating himself as his own patient, which he had such sad occasion to call into play at a later period in his history.

"*Edinburgh, February* 2, 1837.

"My dear Father,—You already are aware that I have been laid up with an attack of bleeding from the lungs. The bleeding has now, I am glad to say, quite gone; and I am now, with the exception of a slight cough, comparatively well. I am still, however, ordered to confine myself to the

[1] Published in the "Cyclopædia of Anatomy and Physiology."

[2] The full title is, "An Experimental Investigation into the Functions of the Eighth Pair of Nerves, or the Glosso-Pharyngeal, Pneumogastric, and Spinal Accessory."

house, and will not be permitted to resume my lectures before Monday.

"These precautions have been enforced upon me by my medical attendants; for, as this complaint is, in the majority of cases, followed by consumption, it is necessary that I should take great care of myself. Indeed, this bleeding from the lungs is so frequently followed by consumption, that had I been complaining of my chest previous to this attack, or was come of a consumptive family, I would at once have given myself up as a doomed man. As it is, however, I am not quite safe; and I may consider myself as liable to be attacked by this disease. I have had my lungs examined by Drs Alison, Simpson, and Henderson, and there is nothing materially wrong there at present. I sincerely hope that I will not have another attack before the end of the session, as it has been a most serious interruption at present. I am myself strongly inclined to think that my lungs are at present quite sound, and likely to remain so; but time will show. . . . Your affectionate son,

"JOHN REID."

His prediction of his complete recovery was fully fulfilled; and the summer and autumn were spent in active research. In the succeeding winter session he delivered his second course of academical lectures, and the first course of popular lectures, already referred to. In the summer of 1838 he resumed his inquiry into the functions of the nerves, and read a paper on the subject at the meeting of the British Association at Newcastle in the autumn of that year. An attack of illness disabled him from lecturing at the commencement of the ensuing session, and his friend Dr J. R. Cormack[1] took his place for some weeks; but he was able to resume his duties before Christmas.

[1] Author of a Prize Essay on Creozote, a very interesting work; of a Prize Thesis (1837) on the Presence of Air in the Organs of Circulation; and of other productions.

In the spring of 1838 he was appointed Pathologist to the Royal Infirmary of Edinburgh. The duties of this office required that he should conduct all the post-mortem examinations of the patients who died in the hospital; and that he should also collect weekly the statistics of the Institution, so far as the nature, progress, and issue of the cases admitted were concerned. Without the co-operation of the resident junior medical officers, these particulars could not be ascertained; and in the spring of 1839, Dr Reid was made Superintendent as well as Pathologist to the Hospital, so that he had a control over the assistant surgeons and physicians. His task was in some respects a delicate one; for however attentive to their patients and to their strictly clinical duties the infirmary clerks, as a body, invariably were, they did not always equally relish the writing out of tables of cases, diet-lists, and the like; and as they were a rather numerous and an unsalaried body of young men, somewhat sensitive as to their independence, and jealous of interference, they were a little difficult to manage. Dr Reid's firmness, however, prevailed over all obstacles. In the words of his able successor in the office of Pathologist, Professor J. Hughes Bennett,—"During the period he was Pathologist to the Royal Infirmary, there was introduced under his superintendence that regular method of inscribing the leading facts connected with each case in a register, which has since prevailed; and he it was who compiled the first series of statistical tables published by the managers. He was always very sanguine with regard to the important results which would flow from statistics applied to medical cases; and although experience has not fulfilled his anticipations, there can be no doubt that under his auspices a more perfect system of registration, and more correct tables, were formed, than had previously existed within any large hospital. . . . . .

"He carried into his inquiries concerning morbid anatomy and pathology, the same accuracy in observing facts, and the

same cautious spirit in drawing inferences from them, that characterised his anatomical and physiological researches. He at once saw the necessity of making his position serviceable to the advancement of medical knowledge; and struck with the inconsistencies which existed as to the absolute and relative size and weight of the principal organs of the body, he commenced another laborious investigation on this subject. He introduced weighing machines into the pathological theatre, by means of which the weight of the entire body was first ascertained, and then, respectively, the weights of the different organs."[1]

It may give the reader some idea of the persevering patience with which he laboured at what to most would have been a very unpleasant and tiresome task, if I mention that he made four separate weighings of the brain in two hundred and fifty-three cases, besides weighing carefully several other of the principal organs of the body. He published also the result of a most careful examination of the bodies of forty-seven individuals who had died of fever, connecting the symptoms observed during life with the appearances found after death. It need scarcely be stated, even to the unprofessional reader, that such investigations are among the most fertile sources of great improvements in the art of healing.

The duties of pathologist and superintendent required Dr Reid to reside in the Infirmary; and he early paid the penalty exacted from nearly all who spend the greater part of the day in an hospital containing fever wards. A severe attack of typhus fever laid him aside for some time; but his strong constitution bore him comparatively easily through this illness.[2]

[1] Monthly Journal of Medical Science, April 1850.

[2] I have often wondered that no special petition is contained in the Book of Common Prayer, or forms part of the unwritten and extemporised supplications of the churches which do not use a liturgy, in behalf of members of the medical profession, especially during seasons of epidemic. Dr Reid

In 1839, Dr Reid was candidate for the Chair of Medicine in King's College, Aberdeen. It was within the option of the University, however, to assign it to the teacher of any branch falling within the province of medicine; and it was arranged that it should be made a Chair of Chemistry, to which Dr William Gregory, the present accomplished Professor of that science in the University of Edinburgh, was appointed. Dr Reid's claims as an anatomist were accordingly not specially considered; but he received a letter from Lord Aberdeen, in which he says, "I could with the utmost satisfaction have made the appointment in your favour. . . If this has not taken place, it has arisen from considerations which in no degree are a disparagement to your professional attainments."

Somewhat later in the same year, Dr Reid was candidate for the Chair of Anatomy in Marischal College, Aberdeen. It was gained by his friend, Dr Allen Thomson, now Professor of Anatomy in the University of Glasgow. These disappointments, or rather what most men would have counted disappointments, did not, I believe, cause Dr Reid the least inquietude, and they certainly did not in any degree lessen the friendly intercourse between him and his amiable and learned rival, Professor Allen Thomson.

I do not find anything special to record of the year 1840, or of the early part of 1841. They were occupied in the same tasks, were characterised by the same diligence, and

had two attacks of fever. In his correspondence, he refers to his brother, Dr Henry Reid, and to many of his medical friends, as having suffered from the same disease, of which more than one died. During my apprenticeship in the laboratory of the Infirmary, among eight of us who were equally exposed to infection, there were, in a period of four years, six fevers and two deaths. The clerks, who were more in contact with the patients than we were, suffered still more severely; and not a few of the most promising young physicians of Edinburgh have perished of fever. A profession thus more than decimated through all its ranks, in its efforts to save from death the members of other callings, has surely a claim for special remembrance in the prayers which are offered "for all sorts and conditions of men."

were rewarded with the same success in the discovery of new truths, as previous years had been.

Dr Reid's reputation was now such as to entitle him to promotion to some academic appointment, and on the occurrence of a vacancy in the Chair of Anatomy in St Andrews, he was elected Professor. The following letter, written from Edinburgh, to his father, will speak for itself:—

"*Royal Infirmary, March* 29, 1841.

"My dear Father,—I believe that I may now look upon myself as one of the Professors of St Andrews. I was elected on Saturday last,—all of the members of the University voting for me except three, and even these were not opposed to me, but were anxious for delay to ascertain the possibility of converting the Chair into one of Natural History. I can scarcely think that anything is likely now to occur which could deprive me of it; but one is never sure of a thing until he is in actual possession of it. I have no intention of leaving the Infirmary until next October, for my services are not required in St Andrews until winter. I am glad that I will only be a few hours' journey farther removed from home. . . . Your affectionate son,

"John Reid."

He resigned his office in the Infirmary at the end of September, and, after visiting London, took up his residence at St Andrews in October; but before he entered on his duties as Professor, he was summoned back to Edinburgh to receive the congratulations of his friends at a public dinner. Professor Alison was in the chair, and his colleague, Professor Simpson, acted as croupier, whilst round the table were gathered a large number of Dr Reid's many friends and well-wishers. From the "Caledonian Mercury" (Nov. 1, 1841), which has preserved the speeches of the chairman and of the guest of the evening, I quote the following passages. They are the utterances of two men who were not to be betrayed,

even in after-dinner speeches, into exaggerated or untruthful declarations:—"Professor ALISON, in an able and eloquent speech, proposed the health of Professor Reid. Dr Reid, he remarked, had been a most zealous and successful cultivator of physiological science, to which department of medicine he had more particularly directed his energies. His original investigations into the physiology of the nervous system had made the profession acquainted with valuable facts, which had at once enriched the science their discoverer cultivated, and procured for himself an extensive and enviable reputation. In a company, so great a proportion of whom belonged to the medical profession, and many of whom had themselves earned great medical celebrity, he need not enumerate the points of originality in their guest's discovery, as with them they were already well acquainted. The unanimous voice would respond to the accuracy of what he now advanced. It was a peculiar property of the achievements in medicine, that they not only produced an immediate advantage to the age of their production, but conferred a lasting benefit upon posterity. Future races would reap the advantages of the medical discoveries of the present inquiring age—to which, in common with himself, all that heard him knew their friend and guest had largely and efficiently contributed. His discoveries were accredited as standards in the records of physiological science. Dr Reid was as much to be esteemed on account of the amiability of his private character, as he was valued for his professional attainments. He might be excused for indulging in a few words on this part of their guest's character,—as since Dr Reid had been his pupil, he had thought so highly of him that he had also been his friend. This friendship began with their first acquaintance, and had continued uninterrupted till the present hour. Latterly, Dr Reid and he had been rival teachers in the same department of medicine; but that accidental circumstance had never for a moment disturbed or ruffled the friendly feeling they mutually entertained. Their rivalry had

only operated as a stimulus in their professional labours, and had rather tended to cherish those feelings of regard which such a relation, unfortunately for the peace and happiness of mankind, too frequently destroyed. In Dr Reid he had found at once a vigorous, a learned, and an able rival, and a sincere friend. The removal of such a teacher was a heavy loss to the Medical School of Edinburgh; but he rejoiced with the numerous company whom he addressed, that the loss was not to the profession, as the scene, not the subject of his labours, only was changed."

"Dr Reid returned thanks, and expressed the pain he had felt in leaving the circle of his professional and personal friends, in whose society he had spent so many happy days. By their example he had been stimulated to those exertions which he was pleased to see had been of such importance as to receive the approbation of Dr Alison, and the numerous company of medical gentlemen whom he had now the honour to address. He hoped they would be able to appreciate his feelings on the present occasion, as to him they were altogether new and peculiar. The present meeting, on his account, was an honour on which he had not ventured to speculate, even in his fondest longings for professional distinction. . . . In their chairman he recognised one of his teachers. . . . In the croupier, Professor Simpson, he recognised his earliest friend, a native of the same village; they had been rivals in the class and at college; they had also been fellows in the play-ground. In short, they stood to each other from boyhood upwards in every possible relation, whether of an educational, warlike, delicate, or social character, which the warm and fitful feelings peculiar to boyhood and youth could produce. Now that the more staid sentiments of manhood had sobered the exuberance of youthful feeling, without detracting from its sincerity or warmth, they both looked back with feelings of unmingled pleasure to those scenes which memory luxuriated to recall, and over which imagination delighted to ponder. It was the feeling

which the recollection of such associations as those he had referred to excited, that produced the embarrassment under which he laboured, and which he hoped would excuse him in the eyes of those from whom he had received so many favours. He would leave this place deeply impressed with the propriety of adhering to those principles which had procured for him this mark of honour. Whatever situation he might in the scheme of Providence be called to fill, the recollection of this night would be a sufficient recompense for all he had done; and the best, the purest, and the noblest stimulus to future exertion, to extend by all the means in his power the science of medicine on the only true basis, that of observation, fact, and legitimate induction, and to pursue these with a due regard to the cultivation of those moral feelings which made society agreeable, and the company of personal or professional friends desirable."

Thus kindly and reluctantly parted with, Dr Reid entered on his new office, and ceased to be seen, except at long intervals of time, in the streets of Edinburgh. He was at this period in the prime of life, athletic and vigorous. Even a casual observer would have been struck with his tall, strong figure, lessened a little in stature, but not rendered ungraceful, by a slight stoop, such as studious men acquire by long leaning over microscopes, or books, or the work of their scalpels. His countenance was not less conspicuous, with its fresh, ruddy complexion, its long locks of black hair of a southern darkness of shade, its broad elephantine forehead, and small bright black eye. The prevailing expression of his face was compounded of strength, earnestness, firmness, and good temper.

He could wear at will, and sometimes involuntarily put on, when deep in thought or intensely occupied, an air of great sternness and severity, but these were not congenial to his nature; and when his features changed, it was more frequently by the corners of the mouth rising into a smile, or the lips parting for a hearty laugh, than by the brows knit-

ting into a frown. He was in his thirty-third year when he became Professor, and every one anticipated for him a long and famous career.[1]

[1] A mask was taken from Dr Reid's face after his recovery from an attack of fever, but it is not a pleasing, or even a striking likeness. Major Playfair of St Andrews executed a fine calotype, representing Dr Reid in profile sitting at the microscope. Dr Adamson also has produced several calotypes of his deceased friend; one, representing the front face, is a peculiarly faithful and beautiful portrait. It a little, perhaps, exaggerates the overhanging of the eyebrows, from the effect of the bright sunshine (to which the face is exposed during a photogenic process), in causing the brows to contract so as to shade the eyes; but it is a striking and agreeable likeness.

CHAPTER V.

FIRST COURSE OF LECTURES AT ST ANDREWS—MARRIAGE—RESEARCHES IN ANATOMY, PHYSIOLOGY, AND NATURAL HISTORY—CHARACTER AS AN ORIGINAL OBSERVER.

"The body is not one member, but many. If the foot shall say, Because I am not the hand, I am not of the body; is it therefore not of the body? And if the ear shall say, Because I am not the eye, I am not of the body; is it therefore not of the body? If the whole body were an eye, where were the hearing? If the whole were hearing, where were the smelling? But now hath God set the members every one of them in the body, as it hath pleased Him. And if they were all one member, where were the body? But now are they many members, yet but one body."—*St Paul.*

THE ancient and beautiful town of St Andrews is unique in Scotland. With its venerable ecclesiastical edifices (too many, unfortunately, in ruins), its conspicuous churches and colleges, its neat, clean, quiet streets, and its air of uncommercial repose, it recalls the aspect of the cathedral towns of England, except that a more widely-diffused intellectual life stirs within it than in most of them. It contrasts, in this respect, with Salisbury and Ely, and perhaps more resembles Winchester or Durham, but the latter, if I mistake not, is commercially a more busy city. The situation of St Andrews is very picturesque, planted as it is on a neck of land, broken into steep rocks stretching out into the sea, and commanding a far prospect across the German Ocean. The University and the Madras College afford peculiar facilities for education, so that, in winter and spring, students of all ages and their friends congregate in the town; and, in the warmer months of the year, its Links or Common, famous

as the best playing-ground for the ancient and popular Scottish game of golf,[1] and its beautiful bay, attractive as a bathing ground, tempt many strangers to become temporary sojourners in the neighbourhood.

Dr Reid was heartily welcomed to his professorship, and entered with alacrity on the duties of his office. His lectures on Descriptive Human Anatomy, delivered to a class necessarily small from the constitution of the University, and composed chiefly of juniors, did not occupy a large amount of his time; but he gave, in addition, a course on Comparative Anatomy and General Physiology, throwing open the door of his class-room to the students and inhabitants of St Andrews, without fee, limitation, or exception. A closely-packed audience of Professors and Clergymen, Gown and Town, attended the lectures, and there was but one opinion as to their merit. From one of the listeners to this course,[2] and

[1] This game, in which Dr Reid, like every other male inhabitant of St Andrews, occasionally took part, is also played on the commons or meadow-ground near Edinburgh, Musselburgh, and Perth; but the St Andrews players are accounted the best. Golf a little resembles the English game of hockey, and is played with a ball struck by a club, but the players all strike towards one goal, and only one plays at a time. The goal is a hole in the ground, or rather there are several holes, into each of which the ball must be struck. The party who sends the ball into each hole by the fewest strokes is the winner, and as the holes are at considerable distances from each other, as well as from the starting point, the object, speaking generally, at the commencement of the game, is to send the ball to as great a distance as possible, and, when near the goal, to drop it into the hole by one or two well-aimed, nicely-calculated strokes. The ball is followed at a walking pace, and the game, which is not a violent one like hockey or cricket, calls into play the same accuracy of eye, precision of hand, and skill in estimating force, distance, direction, and resistance, which invest bowling, bagatelle, and billiards, when not played in a gambling spirit, with a rational and even scientific interest. Golf furnishes, moreover, a pleasant mode of taking exercise in the open air, and is, accordingly, a favourite game with middle-aged men of all ranks and professions. A stranger who should arrive in St Andrews on the eve of a golfing match might find some difficulty in securing a lodging, and would encounter still more perplexity in understanding the occasion of such excitement in a University town.

[2] The Rev. W. Lothian, pastor of the Independent Church, St Andrews.

also in part to his University lectures, I have received the following account of Dr Reid's mode of lecturing:—"I attended his popular lectures on physiology and anatomy the first winter, 1841-2, which excited much attention, and were frequented by a great number of private gentlemen, as well as by the students. . . . . The class-room was generally full. He usually read his lectures, except when demonstrating from the black board. His style was elegant and perspicuous, and his voice clear and musical; but, in speaking extempore, he hesitated occasionally, from apparent diffidence, rather than from want of language. He was most attentive to his regular students, showing much interest in their improvement and success in life; and, from the small number of these, seldom reaching a dozen, his private lectures assumed much of a conversational style, and they clustered round him with all the familiarity and confidence usually exhibited towards a family tutor."

What the majority of the class thought of the lectures, they showed by presenting the Professor (much to his surprise), at the close of the course, with a silver claret-jug. This was given at a public breakfast, largely attended by representatives of all classes of the community. From the newspaper report of the proceedings I extract a part of Dr Reid's speech on this occasion, as in several respects highly characteristic of the speaker:—"The honour this day conferred upon me is one for which I was totally unprepared, and I must attribute it to your kindness more than to my feeble claims upon your favour. The science of physiology, from the nature of my official connection with the Edinburgh Medical School, had necessarily, for several years, occupied much of my time and attention; and, in common with many others, I entertained a strong conviction that several of the doctrines which it embraces are well worthy of the attention of the general student, and might be rendered more available than has yet been done in the cause of general education. Being satisfied that I could venture upon an attempt of this

kind, in this University, without interfering with my preparations for my official course of lectures on descriptive human anatomy, I was desirous of making it, and would have considered my labours more than sufficiently rewarded by the knowledge that I had succeeded in directing the attention of my audience to subjects capable of affording them useful information, and of ministering to their mental improvement, so that I cannot contemplate the proceedings of this day without deeply feeling that I stand considerably your debtor. Mr Sellar [the spokesman of the meeting] has been kindly pleased to express the wish that I may contribute to the fame of this University. This is a hope which my imagination may sometimes suggest, but which my calmer judgment instantly dispels. Though, however, my name may not be honourably enrolled among the illustrious men who adorn the annals of this ancient seminary of learning in every stage of her history, yet it shall be my pride and ambition to exert my best efforts, such as they are, in her service; and though I may not be found in the foremost ranks, I sincerely hope I may be spared the shame of lagging in the rear."

Heartily, however, as Dr Reid was welcomed to his new abode, and flattering as was his reception by his audiences, there can be no question that, for a considerable period, his time hung upon his hands. He could not be happy idle, and there was no outlet for his old activities in St Andrews. The reader will remember his aversion to private practice, and his wish for a situation in a town containing an hospital, where he could make progress in his profession. St Andrews, however, had no hospital or facilities for medical study. It was with difficulty, indeed, that Dr Reid could procure for his medical class the means of demonstrating on the human body, the science which he was appointed to teach. He was, moreover, the only medical professor in the University, which is famous in Scotland as a school of classics, mathematics, and theology, but is too near Edinburgh to aim at being a great medical seminary. He had thus no professional col-

leagues among the teachers of the town, although on the most intimate terms with the medical practitioners. Kind, therefore, though the people of St Andrews were to their new professor, they could not furnish the means of gratifying his special scientific tastes, nor was his one of those natures which rapidly accommodate themselves to new circumstances. He had good reason, also, to think it likely that he might be transferred to one of the larger Universities, so that St Andrews, for the first three or four years of his abode in it, appeared to him only as a temporary residence.

The first summer after receiving his appointment was spent on the Continent. He visited London in May 1842 on his way to Hamburgh, and spent some time with his professional friends in the metropolis, especially his former colleague, Professor Fergusson, and his fellow-physiologist, Professor Sharpey. Anxious, also, to see his old and intimate friend Dr Carpenter, he went down to Bristol, where he narrowly escaped with his life, from the fall of a heavy box upon him from the top of a loaded waggon. It struck him on the shoulder and felled him to the ground, but it fortunately missed his head, and only bruised him severely.[1] This accident made no great apparent impression at the time on Dr Reid, but at a later period he referred with strong expressions of gratitude to the Providence which had spared his life on this occasion.

His exact route through Germany I do not know, but from a letter addressed to Mr Deseret, it appears that he was in Berlin in the middle of July. He had enjoyed the country greatly, and had made the personal acquaintance of several of the celebrated German physiologists, who tried his modesty by the cordial reception which they gave him. He intended to remain in Berlin for about a month, and to return leisurely by Leipzig, Dresden, the Saxon Switzerland, and the Rhine, so as to reach home about the end of

[1] Medical Times, Feb. 1851, p. 186.

September. How much of this ground he actually traversed, I do not know. He reached, at least, Leipzig, where he had an interview with Professor Weber, equally satisfactory to both parties. An unexpected contingency, however, summoned him home by a shorter route than he intended to have taken. A vacancy had occurred in the Chair of Physiology in the University of Edinburgh, in consequence of Dr Alison accepting the Chair of Practice of Physic; and Dr Reid's friends, in Edinburgh, who longed to have him once more among them, started him as a candidate, without waiting to consult his own wishes. In truth, he could not be communicated with for some little time, for his wanderings in Germany had carried him out of the direct line of postal correspondence; and before he reached Edinburgh, his able competitor, Dr Allen Thomson, had made the best use of his time, and in the end gained the election.

It was thought by many friends of both parties, as well as by impartial lookers-on, that the issue *might* have been different had Dr Reid been earlier in the field; and my friend Dr Allen Thomson, I am sure, will count it no disparagement of his qualifications if I say, that the competitors were so well matched, that the slightest extrinsic and accidental advantage on either side, was certain to turn the scale in favour of him who enjoyed it.

The decision of the chair was learned by Dr Reid with his usual equanimity. "He received," says the biographer in the Medical Times, "the tidings of defeat with a laughing face, remarking, 'It's just as I expected it would be.' In company with a particular friend, he walked across Bruntsfield Links immediately afterwards, and rejoiced rather than otherwise at the decision, saying, that he felt a great load off his shoulders, as the canvassing and lionising for the purpose were a great bore to him. Whilst the two friends were walking towards Morningside, and he was congratulating himself on the result, who should cross their path but Allen Thomson, hastening to announce his election at Morland

Cottage, where his father lived. Dr Reid immediately walked up to him, and with a face as bright and cheerful as his heart was honest, said to Allen, 'I can assure you my congratulations are sincere, and I hope you will find the Chair everything you can desire.' Dr Thomson's reply was equally pleasant, adding, 'that the news, which he was about to convey to his anxious father, would be made still more agreeable by his being able to add that his opponent had already wished him joy on his way thither.'"[1]

Of 1843, and the early part of 1844, I do not find anything specially interesting to record, except that several lengthened and important physiological papers, chiefly of the nature of commentaries or reviews, and reports, were written during this period. On first October of the latter year, Dr Reid married Miss Ann Blyth of Edinburgh, and from that time, as the comforts of a happy home gathered round him, and especially after he became a father, he grew quite reconciled to St Andrews as a place of permanent residence, and again devoted himself to original inquiry, which for a considerable period had been laid aside. In a letter addressed to Dr Hugh Cleghorn, H.E.I.C.S., of date July 1845, he says, "I am working a little at the zoophytes, being the only kind of work approaching to my former pursuits which I can procure here. I was as happy in the old Infirmary, hard worked as I was, as I have ever been since. I think one never feels happier than when kept hard at some work which affords instruction and pleasure."

The succeeding four years were devoted in considerable part to researches into the natural history of the marine animals abounding on the sea-coast. A fine miscroscope was procured from Paris, and observations were made on the structures and habits of the rarer creatures both before and after death. The results were embodied in papers communicated chiefly to the "Annals and Magazine of Natural

[1] Medical Times, Feb. 1851, p. 187.

History," and the latest was also read to the Royal Society of Edinburgh.

In 1848, Dr Reid collected into one volume the greater part of the Researches which, during the preceding thirteen years, he had contributed to various periodical journals: and, as he only survived long enough to publish a single additional paper, I may here offer a sketch of his labours suitable to the general reader.[1]

Dr Reid's collected papers are entitled PHYSIOLOGICAL, ANATOMICAL, AND PATHOLOGICAL RESEARCHES. They form a thick octavo volume of 660 pages, containing twenty-eight Memoirs of different lengths, which may be thus arranged:— Three are on natural history, and will be referred to last of all; five are anatomical papers; four contain original observations on important points connected chiefly with the brain, the heart, and the blood vessels, but also referring to some of the other large organs of the healthy human body. The fifth anatomical paper, already referred to, discusses a peculiar structure in the body of a species of whale.

On pathology, there are ten essays. Some of these describe morbid or abnormal structures observed in the human subject after death. One refers to a singular malformation observed in the dog. Others discuss morbid actions or functions; the mode in which death occurs in certain diseases, or injuries; and the means most likely to

[1] The medical reader will, of course, consult Dr Reid's own volume, which is enriched by appendices to the majority of the papers, containing the latest discoveries up to 1848, made in reference to the subjects discussed in his work. In the "British and Foreign Medico-Chirurgical Review," for April 1849, will be found an admirable Analysis and Criticism of Dr Reid's Researches, which met with his entire approval. This review is from the pen of Dr Carpenter, who has kindly allowed me to make what use of it I please. Dr J. Hughes Bennett's estimate of Dr Reid's labours will be found in his interesting Memoir of the latter in the "Monthly Journal of Medical Science" for April 1850; and a brief account of Dr Reid's more important investigations is given in the Biographical Sketch contained in the "Medical Times" for January and February 1851.

prevent or retard a fatal issue. The remaining papers are on physiology. Four are critical discussions of disputed questions in the science. Their titles are, "On Sensational and Emotional Reflex Actions;" "On the Effects of the Entrance of Air into the Veins;" "On the Cerebral Circulation;" "On the Value to be attached to Experiments on the Nervous System." The other physiological researches are the most important of all Dr Reid's Essays. They are six in number, and record the results of as many exceedingly elaborate inquiries into the functions of living organs. Two of these researches had reference to the action of the heart, the large blood vessels, and the lungs. The remaining four are investigations into the powers or endowments of certain of the great nerves of the body. All of those inquiries demanded, besides, other modes of research, the performance of a very extensive series of experiments on living animals, implying the infliction of much suffering. To the moral aspects of this mode of investigation, to which Dr Reid gave much attention, I shall again refer; meanwhile, I request the reader's undivided attention to the scientific results of Dr Reid's inquiries.

It would be impossible, within the compass of this volume, even were I competent to the task, to give so much as a brief outline of the large additions which the subject of my Memoir made to various departments of physiology; nor would it be intelligible to general readers. I shall therefore select the most famous of his investigations as an example of his method of research. Before discussing these, however, I quote the judgments passed by two of his contemporaries on his entire labours. "We are convinced," says Dr Carpenter, "that few save those who have made physiology a special object of pursuit, are at all aware how largely the world is indebted to Dr Reid for the series of important researches," referred to.

"As a physiologist," observes Dr J. Hughes Bennett, "he may be considered to have been unsurpassed, not, indeed, because it has fallen to his lot to make those great discoveries,

or wide generalisations, which constitute epochs in the history of the science, but because he possessed such a rare degree of caution and conscientiousness in all his researches, that no kind of investigation, whether literary, anatomical, physiological, or pathological, that could illustrate any particular fact, did he ever allow to be neglected. . . . . His volume contains more original matter and sound physiology, than will be found in any work that has issued from the British press for many years."

The titles of Dr Reid's papers on the structure and functions of the nervous system, which I select as furnishing the best illustration of the nature and value of his researches, are:—"On the Relation between Muscular Contractility and the Nervous System." "An Experimental Investigation into the Functions of the Eighth Pair of Nerves; or, the Glosso-Pharyngeal, Pneumogastric, and Spinal Accessory. Part First." "An Experimental Investigation into the Functions of the Eighth Pair of Nerves, etc. Part Second." "On the Effects of Lesion of the Trunk of the Ganglionic System of Nerves in the Neck, upon the Eyeball, and its Appendages." "On some Points in the Anatomy of the Medulla Oblongata." "On Sensational and Emotional Reflex Actions." "Tables of the Weights of some of the most Important Organs of the Body at Different periods of Life." "On the Value to be attached to Experiments on the Nervous System." "On the Cerebral Circulation."

To estimate the value of these researches, some preliminary description must be given of the more important structures and functions of the body. Our living frames consist, fundamentally, of a bony framework or skeleton, enclosing or protecting the important central organs, such as the heart and brain; and furnishing in the ribs, in the bones of the limbs, and spine, and in certain other organs, the levers by which the necessary movements are executed, and the fixed points and fulcra, from which the muscles and tendons, which are the cords moving the levers, act when effecting motion. This

complex framework, including many other appendages, of which only the organs of the five senses can here be specially referred to, is ministered to by four great systems. Of these, the first is the alimentary apparatus, including all the digestive organs. The second is the windpipe, with its manifold subdivided tubes, by which air is carried into the lungs, and from them, by solution in the blood, is transmitted to every part of the body. The third system includes the two great sets of blood vessels; the one, the arteries, which spring from the left side of the heart, and convey the bright red blood which has reached it from the lungs, to the remotest point of every organ; the other, the veins, which return the spent and deteriorated blood to the right side of the heart, from which it is transmitted to the lungs to be purified by its contact with the inspired air, and return to the left side of the heart to repeat its circulation in the arteries as vivifying blood. The fourth is the nervous system, which furnishes a multitude of white cords, or *nerves*, spreading like the branches of a tree, as widely as the ramifications of the arteries and veins throughout the body, linking all parts together, and connecting them with the brain and spinal cord (or marrow), from which, and to which, like the metropolitan telegraph station of a kingdom, messages are ever passing and repassing; question and reply, command and acknowledgment, coming and going, so that the central city, and the furthest outpost, are unceasingly exchanging communications.

Our bodies may thus, with a certain propriety, be likened to a great building, which owes its erection, its peculiar configuration, its preservation from decay, its daily arrangement and frequent repairs, to the busy traversers of its walls and corridors, who renew what time has tarnished, or crumbled, or effaced, as the daily bread on which we live restores the waste of our frames. In such a building, also, there is a carefully arranged system of ventilation, by which air flows in by certain channels to feed the fires, and when rendered

noxious by its action on the fuel, passes outwards by other channels into the atmosphere. There is likewise a double system of pipes, one by which pure water is brought into the edifice, and another by which, after it has become impure, it is carried away, and thus far there is a current setting towards the centre, and one setting from it; although it would be straining the comparison to say that there is a true circulation. Lastly, if we suppose an electric telegraph, with its galvanic battery and indicating machine, which may most imperfectly represent the brain and allied organs, and its far-stretching wires, which are the counterpart of the nerves, arranged so as to place all the corners of our imaginary building in communication with each other, we may faintly and rudely realise the harmonious complexity of "our earthly house of this tabernacle."

But every such comparison falls far short of the reality in one important particular. In houses made with hands, there is no connection of mutual dependence between the air channels, the water pipes, and telegraph wires. Each system is independent of the rest. The water will flow, though the air is stagnant; and the air will circulate, though the water ceases to run, and the telegraph wires are broken. Alterations on one set of these channels of communication have no influence over the condition of the rest. It is otherwise with our living frames. What St Paul foresaw with the eye of inspiration, modern science justifies to the letter,—"God hath tempered the body together, having given more abundant honour to that part which lacked: that there should be no schism in the body; but that the members should have the same care one for another. And whether one member suffer, all the members suffer with it; or one member be honoured, all the members rejoice with it."

If food is not taken, blood cannot be formed; but it is only because the living creature has blood already circulating in it, that it can digest the food and turn it to account. The circulation thus waits upon the digestion, and the digestion

on the circulation: the stomach ministers to the heart, and the heart to the stomach.

Again, the blood stagnates in the body if air does not enter the lungs; but air will not enter if the circulation of the blood ceases; so that respiration and circulation are each other's handmaids. Once more, the brain and nerves are paralysed if emptied of blood; but the heart quickly ceases to palpitate if the great nerves are injured: neither can we taste, nor swallow, nor breathe, nor move, if the nervous centres are destroyed. Heart and lungs, brain and stomach, nerves and blood vessels, are thus givers and receivers, borrowers and lenders, in relation to each other. An unceasing barter of good offices goes on between them. Disease is the failure of one or other to balance its accounts with the rest, and death is the bankruptcy of all.

From what has been said, it will be seen that an investigation into the structure and functions of the different component parts of the nervous system is in reality an inquiry, more or less complete, into the powers of every organ of the body. Dr Reid's merits as an observer will thus be done justice to as a general physiologist, though the particular text taken to illustrate them is, his researches into the action of the nerves. To these I now turn.

The nervous system of man and of the higher animals, is a singularly complex aggregate of structures. Within the protecting skull lies the brain, and continuous with it, and protected from injury by the strong and supple spine or backbone, extends the spinal cord, which is not formed of marrow, as its familiar name implies, but of exactly the same kind of substance, speaking generally, as the brain. Spreading in all directions from the brain and spinal cord are the nerves, which appear to the unassisted eye like soft white cords enclosed in protecting sheaths, and extend their fibres to every portion, however minute, of the body. The office of these nerves is to convey certain impulses from the great nervous centres (by which term we conveniently denote the

brain and spinal cord) throughout the body, and to convey certain other impulses, in the reverse direction, from the surface and more distant points of the system to the nervous centres.

The nerves so far resemble, as has already been implied, the wires of an electric telegraph, stretching, for example, from London to the cities and villages in the provinces, and conveying messages from the metropolitan centre to the outlying towns, and from these towns to the metropolis.[1] But there is this great difference between the two arrangements:—In the electric telegraph there is but one endless wire (or its equivalent) needed, which, though not in formal arrangement, yet in fact, is a great ring or circle, round the circumference of which are placed all the towns which it links together. By the same wire the electrical impulses, which originate the messages, travel north or south, east or west; from London to Thurso or Land's End, and from Land's End and Thurso to London.[2]

In the living telegraph, on the other hand, there are *at least* two sets of conductors, living wires or nerves, and two distinct kinds of impulse, each of which is propagated or transmitted by a set of nerves appropriated to itself, and

[1] The comparison instituted here, and in the sequel, between the nervous system and an electric telegraph, is made solely for the sake of illustration, and not with any intention of favouring the opinion that the nerves are merely electrical conductors. I do not advocate that doctrine; but it is not necessary to discuss it here.

[2] In our existing telegraphs, one half only of the electrical circuit is a metallic wire, the other half being, in the case of the land telegraph, the soil or earth, and in the subaqueous telegraph, the mass of water, or wet silt or sand, between the points to which the wire reaches. The current of electricity thus travels in one direction along a metallic conductor, and returns in the opposite direction along a conductor of earth or water; or *vice versa*. The earth or water might be replaced by a wire, and the whole circuit be metallic, as it was in the earliest and simplest electric telegraph, which is selected for illustration in the text. There are reasons for believing that every nerve is in reality a closed nervous circle—in other words, a continuous cord like the telegraph wire; but upon this I do not dwell.

never invaded by the other. The one set of nerves may be considered as commencing on the surface of the body, in the substance of each structure, and specially in the organs of the external senses, such as the eye and the ear. These nerves pass thence to the brain and spinal cord, and convey to them the *sensations* impressed upon them at the places of their origin; or rather they convey to the nervous centres certain impressions, which beget in the mind those sensations of heat, cold, pressure, pain, and the like, of which during waking existence we are every moment conscious. The nerves thus referred to are termed nerves *of sensation*, or *sensific nerves*. The nerves of the second class commence at the brain and spinal cord, and from these pass throughout the body to the various muscles or bundles of fleshy cords which produce, by their contractions, the majority of the movements of the body. These are named nerves *of motion*, or *motific nerves*. An example will illustrate the total difference between the functions of the sensific and motific nerves. When the hand by chance touches a nettle, and a sting of pain is felt, it is by nerves of sensation that the impression is transmitted to the brain, and there begets in the conscious mind the sensation of uneasiness. But the swift deliberate withdrawal of the hand from the nettle is determined by a volition which acts along nerves of motion, and summons into action the muscles requisite to draw back the hand. The eye can discern no difference between the sensific and the motific nerves, but the office of the one cannot be discharged by the other. The proof of this lies in the fact, that if by accident or disease, or design, the nerves of motion which proceed to the muscles of the hand are divided, the will is powerless to move it, however intense may be the desire to do so; whilst, if the nerves of sensation are uninjured, the acutest pain may be felt. If, again, the nerves of motion are intact, whilst those of sensation are destroyed, a mass of ice and a piece of red-hot iron will be equally inoperative in conveying any impression to the hand

which touches them, although the power of withdrawing it remains entire. In cases of palsy we often see the one set of nerves thrown totally out of action without the other being affected, so that the sufferer can move his limb, but has no feeling in it, or feels in it, but cannot move it. When chloroform is given to a patient, it suspends the functions of the nerves of sensation, but the nerves of motion remain unaffected, and the patient, though painless, often writhes and struggles as if in pain, and calls into action most of the muscles of the body.

The nervous centres, and the sentient points of our living frames, are thus quite unlike corresponding telegraph-stations, which only send back and forward, or round and round, the same electric shuttle along a common line. The comparison would hold if there were some such arrangement as a *voltaic* battery at London, which employed a set of *copper* wires to transmit its commands to the provinces by means of *electricity;* and a *magnetic* apparatus at each provincial station, which employed a set of *iron* wires to convey its intelligence to London by means of *magnetism.* But even this twofold system would fall far short of what is realised in the living body, as the sequel will show.

From the back of the eye proceeds a nerve, which alone, of all the nerves of the body, can receive the picture of the outer world, which light is ever painting, and can transmit that impression which the mind realises as vision. This *optic* nerve has no other function. It cannot call into action the muscles which roll the eyeball, nor does it convey ordinary sensation or pain. The ear, too, has its special *auditory* nerve, on which alone vibrations act so as to make us conscious of sound; and the nostrils have their *olfactory* nerve, which alone makes us cognizant of odours. The one nerve, as it were, hears and only hears; the other smells and only smells.

Our bodies thus, during life, are the seats of at least six different telegraphic arrangements, such as we might imper-

fectly imitate in our artificial telegraphs, if—in addition to a galvanic battery and connecting wires to represent the sentient surfaces and nerves of sensation, and a magnetic machine with communicating wires to represent the nervous centres and the nerves of motion—we had *one* apparatus which kept constantly daguerreotyping, at the metropolis, all the objects visible at one of the distant stations; a *second*, which reverberated to the centre all the sounds uttered at another terminus; a *third*, which wafted to the central rendezvous all the odours developed at a third terminus; and a *fourth*, the most difficult of all to imitate, which reproduced at the centre the savours of all the substances presented at a fourth terminus. John Bunyan would have called those termini, Eyegate, Eargate, Nosegate, and Mouthgate. There would be no need for a special Touchgate, for the same nerves which communicate common sensation, appear to give tactile sensibility.

Complex as this arrangement appears, and in reality is, it includes but two sets of nerves. The one set consists only of nerves of sensation, of which some are *special* in their function, namely, certain of those of the eye, ear, nose, and tongue, which have just been referred to, and the rest are *general* in their function, including those by which we exercise the sense of touch. The second set of nerves consists solely of the nerves of motion already described. By *five* different kinds of sensific nerves we thus see, hear, smell, taste, and touch. By *one* and the same set of motific nerves, our wills act upon the muscles of our bodies so as to move them. A beautiful object may induce us to turn our eyes towards it; or the hearing of some notes of music, to join in singing; or a grateful odour, to pluck a flower; or a pleasant taste, to continue eating; or all the special sensific nerves may be, as they often are, conveying impressions at once to the mind; but the auditory nerve has no control over the muscles by which we sing, nor does the optic nerve regulate those by which we move our eyes, nor the gustatory nerves

those by which we masticate. Their work is ended when they have transmitted the impressions which only they can transmit, and they have no twin or corresponding motific nerves to signify to the muscles that they must obey the impulse which makes the member of a choir, on hearing the leader's note, begin to sing, or the portrait-painter lift his hand and move his fingers, or the hungry man put his jaws in motion. A single set of nerves is sufficient to respond to all our sensations, when these give rise to volitions; for the raising of the hand, for example, is a purely mechanical movement, which is determined by the same levers and muscles, whether the hand is lifted to strike or to caress, to accompany cursing or blessing, prayer or praise. It is as needless that there should be sets of motific nerves corresponding to all the sensific ones, as that we should have one kind of press to print prose and another to print poetry, or three separate contrivances to stamp on the page of a newspaper the births, deaths, and marriages.

We reach, then, this conception of the arrangement of the nerves, considered in their simplest aspect, that they correspond so far to the blood vessels, that the nerves of sensation, like the veins, bring influences from the distant points of the body to the central organs, whilst the nerves of motion, like the arteries, radiate influences from the centres to the circumference and extremities. The former, accordingly, are distinguished as *afferent* (carrying inwards) or *centripetal* (centre-seeking) nerves; the latter are named *efferent* (carrying outwards) or *centrifugal* (centre-fleeing) ones.[1]

Thus far, then, we realise in the microcosm, or little world of our own bodies, a great centre like the ancient Jerusalem,

[1] The sensific nerves have also been named *esodic* (ingoing), and the motific nerves, *exodic* (outgoing). The former term is the most appropriate one for certain nerves, which, like the sensific ones, pass from the body towards the nervous centres, and without producing sensation call into action muscles through the impulse which they determine along motific nerves. An *esodic*, or ingoing nerve, therefore, may be a sensific one, but does not necessarily occasion a sensation.

whither the tribes went up, and whence the messengers went forth who carried the Light of Life throughout the world.

We must look, however, a little more closely into matters before we can understand the difficulties with which the physiologist has to deal, who investigates all the functions of the nerves. Hitherto we have considered nerves of motion called into action by volitions, which were determined by impressions made on the conscious mind, through impulses conveyed along the nerves of sensation. But we execute many movements *involuntarily*, in obedience to sensations or emotions which we cannot control. Thus, if a bright light suddenly flashes on the eye, the pupil contracts, or diminishes in size, in obedience to an impression on the optic nerve, which is *reflected* through a nerve of motion to the circular muscle which forms the iris (or coloured ring of the eye), so that it contracts and makes the pupil smaller. By a similar agency, a blow aimed at the eye causes the eyelid to close and protect it; and every moment the same involuntary and almost unconscious process is covering and uncovering the organ of vision, with a rapidity so great, that the "twinkling of an eye" is a sacred and time-honoured expression for the smallest measurable lapse of time. In like manner, laughing, crying, sobbing, sighing, hiccup, yawning, coughing, gasping, and many other actions, are, as every one has experienced, not only many times performed without an effort of the will to secure their performance, but against its most energetic efforts to prevent their occurrence. Of this nature, also, are many of the movements of the chest, connected with respiration, which we can, if we please, within certain limits, increase or diminish, but cannot by a voluntary act abolish; whilst we can maintain them without any strain on the will or attention, so that the child an hour old breathes as well as the stripling, and has less than nothing to learn from his panting grandsire. Respiratory movements of this kind, proceed during the deepest sleep, and do not cease during the profound unconsciousness occasioned by

chloroform. They are thus different in their action, from such motions as the flexion of the limbs, in effecting which we deliberately and resolutely will to strike a blow, or to leap or run, and exult in the consciousness that we have willed to do so. We do not, on the other hand, will the pupils of our eyes to contract in sunshine, or to dilate in darkness. It is only, indeed, by watching the eyes of another, that we discover that such dilatations and contractions occur. We do not will to laugh when we are suddenly seized at a funeral with a ludicrous idea, and struggle against even the faintest smile. The convulsive sobbings of deep grief, the cries which pain calls forth, the wincing when cut or burnt, and many other actions, are often performed against an anxious effort of the will to prevent them. Their performance implies the motion of many muscles; but these have not been called into play intentionally, with a foresight of the effect they would produce, or a purpose of producing it. An irresistible instinctive impulse secures obedience to its command, and compels performance of an act, whether we will or no! Such instinctive acts have generally, probably always, a good end to serve; as the shrinking from the sharp or hot body that would injure us; the flinging out of the arms when we fall, which lessens the shock of falling; the deep expiration, which relieves the lungs from the vitiated air accumulated in them; and the repeated winking of the eyelid, which removes dust, and constantly wipes clean the surface of the eye. Of these consequences, however, we think nothing; nor do we require to think anything. The infant winks as well as the adult, and laughs and cries a great deal better. Education does nothing in making more easily performed such instinctive acts, which we execute as perfectly on their earliest trial, as the bee faultlessly shapes its first cell, and the bird builds its first nest. It is otherwise with purely voluntary acts, in which the child is an utter novice, so that he very slowly learns to stand, or speak, or walk; whilst, as we see in the fingers of the musical performer, education and practice can

prodigiously enhance the power of the will over the muscles. There is thus a necessity for an arrangement of nerves being provided, so as to secure the performance of instinctive, as well as voluntary actions. The latter only occur at the bidding of the will, the former are indifferent to its commands; and it is powerless to prevent them. The conditions for their performance are, an *emotion*, such as horror, which makes us shudder; or shame, which makes us blush; or joy, which makes us laugh; or anger, which makes us frown;—or a *sensation*, such as cold, which makes us shiver; or pain, which makes us writhe; or the sight of another yawning, which makes us yawn; or a quick plunge into the sea, which makes us sigh and gasp. In these cases the control of our muscles is, as it were, taken out of our hands, and we are puppets in the power of our sensations and emotions, which compel us to act, and which play upon our muscles, as if these were the keys of a musical instrument.

The last comparison will assist us to something like a just understanding of the twofold power and action of our bodies. A chamber-organ can be so constructed, that by means of a finger-board, a player can execute upon it whatever pieces of music are within its compass and his skill, whilst it may be further provided with an additional mechanism, such as a revolving cylinder with pegs upon its surface, which, when moved by a weight, or a spring, or a crank, will determine certain of the organ-pipes to sound, without the intervention of any player. Our bodies are such instruments: the finger-keys are the muscles, the fingers of the player are our volitions, which, by acting on the unseen levers, produce what music they choose; only, although their skill be of the greatest, they cannot compass more than the range of the instrument permits. The accessory mechanism, which is limited in its power to evoke the musical capabilities of the organ, is the representative of our feelings, whether sensational or emotional. The relaxation of a cord, the release of a spring, or the momentum of a weight, is all

that is needed to move the pegs which mechanically open the organ pipes, and each time the barrel revolves the same notes are sounded. So, also, whenever the eye is exposed to bright light the pupil diminishes, when it meets darkness it expands; nor does it ever in health vary those movements. With similar unvarying uniformity, the instinctive actions already referred to, are unceasingly repeated, as often as the sensations or emotions which prompt them are felt.

This, however, is not all. In addition to the involuntary control exercised over our muscular movements by our feelings, we are susceptible of influences which convert us into automatons. A corpse soon after death, and in which there cannot be volition, or sensation, or emotion, may be excited by a galvanic battery, fitly applied, into the most powerful and lifelike movements. In some diseases, such as cholera, convulsive struggles are exhibited after death, without any artificial interference. In other diseases, the same phenomenon shows itself during life, even more strikingly. Thus it has happened, that those who have suffered an injury to the spine, so as to be rendered paralytic, in other words, who have become unable to will into action the muscles of the limbs, have still remained susceptible of involuntary excitation of these muscles, so that if the foot were suddenly touched by a hot body, the lower limbs moved violently, although no sensation was felt by the sufferer, who was not conscious of the motion of his limbs, and did not will them to move. Similar actions occur during health in man, and still more in the lower animals. They differ from the instinctive movements already referred to, in not requiring the intervention of sensations or emotions, and are distinguished as automatic. To determine their occurrence, an influence must be propagated along an ingoing nerve,[1] to the central

[1] Such a word as *afferent*, or *centripetal*, is too unfamiliar, I fear, to be generally intelligible. Physiologists have another term, "esodic," already referred to, which I have rendered in the text "ingoing."

nervous organs, and a reflex impulse originating in these must pass along an outgoing nerve of motion. The former influence is believed to resemble, if it be not identical with, the impression that creates a sensation, the latter corresponds to the impulse which is transmitted by a motific nerve when called into action by a volition; but no sensation is felt, and no volition is exerted. It is not necessary, however, to distinguish minutely between instinctive and automatic motions. They differ in so far as certain of the instinctive motions imply the occurrence of a sensation or emotion before a movement is effected, whilst the automatic motions do not necessitate this. They agree in being involuntary, and this character, which is common to them, is the one of most importance. An example will illustrate their mode of dependence upon nerves. When a strong light suddenly flashes on the eye, the pupil instantly diminishes its aperture, the eyelids are closed, the eyebrows corrugated, and the hand raised to shade the face. The raising of the hand is a purely voluntary action. The knitting of the brow, and shutting of the eyelid, are under the control of the will, but are also under the influence of an instinctive impulse, especially (as we have already seen) the motion of the eyelid, so that if we do not deliberately resist the impulse, we certainly, and almost unconsciously wink, when suddenly exposed to bright light. Over the contraction of the pupil we have no power. The different extent to which the movements in question are under the control of the will, is strikingly seen when a daguerreotype portrait is taken. The sitter, as soon as the light falls on his face, exhibits a contracted pupil. He has no difficulty in holding his hands still, but it requires some effort to keep the eyebrows unknitted, and still more to maintain the eyelid raised; and it infallibly falls, if the sitting is protracted over even a very short interval of time. Here there are three distinct kinds of movement. The motion of the iris of the eye quite involuntary; the motion of the hands quite voluntary; and the motion of the brows and of the

eyelid, under the control both of the will and of instinct. When we look to the nervous apparatus by which those motions are effected, we find that the muscular fibres of the iris are supplied with a nerve of motion, to appearance identical with the motific nerves which go to the muscles of the hand. This ocular motive nerve, however, differs from these nerves in not obeying volition, whilst it is placed under the imperative control of the sensific optic nerve, so that whenever light impinges on the expanded termination, or *retina* of the latter, an impression is conveyed backwards *to* the brain, which, besides producing the sensation of light and vision, instantly determines an impulse to proceed *from* the brain[1] along the ocular motive nerve to the iris, so that it widens or contracts its area in obedience to the impulse. Such a movement is called a *reflex* one, because it is the result of an impression passing *towards* a nervous centre along a sensific nerve, and then *reflected*, as it were, from this centre, in the reverse direction, along a motific one; whereas the deliberate movements of the hand are determined by volitions acting *directly* along a motific nerve, and the muscles of the eyebrow and the eyelid are supplied with *directly* motific and *reflexly* motific nerves, so that the motions of the organs they supply may be intentional, instinctive, or automatic.

I pause for a moment to direct the reader's attention to the exquisite and benevolent design shown in the endowment of living creatures with such an arrangement of nervous apparatus as I have been describing. Sentinels who never slumber, who cannot be bribed, and who know their duty perfectly from the first, watch over all the gates of life, and guard its issues. The infant needs no chemist's curious analysis of milk to prove that it is potable, nor any wise mechanician's instructions in swallowing, nor warnings against the risk of forgetting to inspire, but drinks without hesitation

[1] Physiologists will understand that, for simplicity's sake, I have omitted all reference to the influence of the ciliary, or the superior cervical, ganglion over the movements of the iris.

from the fountain which nature has furnished for it, and breathes, and sucks, and swallows, at the fit intervals, instinctively solving at the first trial a practical problem beyond the reach of all our applied mathematics and mechanics.

God hath created us in his own image, and his inspiration giveth us understanding. In our higher intellectual gifts, and still more in our moral sympathies and capacities, He has furnished to us a fuller testimony to his own existence, and a deeper reflection of his own character, than any other work of creation exhibits. But in the nervous apparatus we have been considering, so exquisitely contrived to fulfil its purpose, so essential to the maintenance of life, and yet so independent of the will, and even the consciousness of the living creature whose welfare it secures, we see in some respects a still more marvellous illustration of the power and the mercy of Him who is the Light and Life of the world. The instincts of the babe are no inheritance of cultivation, no fruit of the affection of its parents, however loving they may be. The infant has received, direct from the hands of the God and Father of us all, powers without which no love or care of earthly parents could prolong its life for a moment. And all throughout our mortal existence we are ministered to by bodily functions resembling those specially noticed in the child, of which we are unconscious, yet without the continuance of which, consciousness and every other living act would quickly cease. "Divinity stirs within us" in another and higher sense than the poet proclaimed. We stand nearer to God, even as mere animals, than we are accustomed to believe, and after we have employed every faculty which He has given us, in the furthering of our welfare, we find modern science, with unmetaphorical literalness, echoing the utterance of ancient wisdom, and following, with its passionless "AMEN," the inspired declaration, that "in God we live, and move, and have our being."

I have made this digression lest any should imagine that the difficult, and to some persons forbidding, investigations

which I have been discussing, have interest only for a few professional or scientific men, and do not teach a lesson to all.

I return to notice, that from what has been stated it will appear, that our bodies and those of other animals must of necessity be largely supplied with nerves which minister to instinctive and automatic actions. In some of the lower animals the latter class of movements abounds, and in them we see most strikingly the essential character of both classes of movement. Certain insects recall to us such an arrangement as is seen in the magneto-electric clock, where a current of electricity, passing along a wire in one direction, determines a current of magnetism to pass in another direction through a mass of metal, which immediately becomes magnetic, and causes the pendulum to move towards a fixed loadstone or permanent magnet. The electrical current here resembles the impulse propagated along an ingoing nerve; the transverse magnetic current which it determines, is like the reflex impulse passing along the nerve of motion; the fixed loadstone (or permanent magnet) resembles the muscle thereby called into action, and the pendulum is the limb which is moved. In the clock, we know that the electricity cannot by possibility pass in one direction without developing magnetism in another direction, and that the instant the pendulum is magnetised, the loadstone begins to move it. So, also, in reflex action, whenever an impression is conveyed inwards along an afferent (or ingoing) nerve, an impression is determined outwards along a motific one, and motion occurs. In the higher animals the inward impulse records itself as a sensation; in the lower it does not. But in man the same absence of sensation frequently shows itself in reference to certain functions both in health and in disease, so that an impression from the outer world, with or without sensation, followed by motion, without a volition to that effect, is the essential character of reflex actions. It thus appears that, besides nerves of sensation exciting, and nerves

of motion obeying the will, we must have what may be called nerves of *reflex impression*, or *reflex sensific* and *automatic* nerves,[1] and nerves of *reflex motion*, or *reflex motific* nerves.

Wondrous as are the endowments of the nerves we have been considering, there yet remains for notice another system of them. Within the body, chiefly among the spine, are placed at frequent intervals certain small masses of nervous matter, communicating with each other by multitudes of nervous filaments, and looking like *knots* upon a skein of ravelled thread. These are called *ganglions* from this circumstance, and the word has an unintentional metaphorical, as well as literal significance, for it is a very difficult question to decide what their exact function is.

It is known, however, that each of the knotty ganglions is, as it were, a little brain, or rather nervous centre, which, like the great cerebro-spinal axis, can receive impressions along certain nervous fibres, and issue impulses along certain others. It has further been ascertained that the ganglionic nerves are chiefly distributed to those internal organs, such as the stomach and heart, which in health are beyond the reach of our consciousness, and are not in any condition within the influence of our will. These organs are subservient to our purely vegetative life, and the process of digestion, and that of circulation, are as much beyond our control as the movement of the sap is independent of the tree in which it occurs. The nerves proceeding from the ganglions link together in mutual sympathy the organs in question, and the others which along with them directly minister to our daily growth and sustenance; and the system, as a whole, has on this account been called the Sympathetic Nerve.

[1] These are frequently named *excito-motory*, because they call into action motive nerves, and thereby muscles. There are thus two kinds of ingoing nerves, sensific and non-sensific (styled in the text *automatic*); many of the former, and all of the latter, are *excito-motory*. In disease, a sensific nerve may lose power to convey sensation, but retain the power to excite reflex action.

Although so far, however, separate in its functions, it is placed in connection by means of intercommunicating fibres with the other sets of nerves already referred to, so that the organs of vegetative, and those of animal life, are brought into living connection with each other. It thus happens that strong emotions, such as those of fear, or joy, or wonder, affect the heart so as to make it throb; that intense pain or anxiety totally destroys the appetite, and stops digestion; and that, reversely, palpitation of the heart or indigestion produces headache and sickness.

We may, carrying out a figure formerly used, compare this sympathetic nerve, with its chain of connected ganglions, to the system of cross-posts in our island, by means of which local intelligence is conveyed from one provincial town to another, and from village to village, without passing through the metropolis, or becoming known to it; whilst at the same time these cross-posts also communicate by more or less direct channels with the great trunk-lines of communication in the island, and can sooner or later transmit to the deliberative assembly in the capital any views of special interest which concern the whole country, and receive in return the decisions of the legislative council in times of emergency.

Altogether, then, we have three distinct yet associated systems of nerves, which may be distinguished as that of Volition; that of Instinct; and that of Vegetative Life. Each system includes two kinds of nerves; one radiating towards a nervous centre (brain, spinal cord, or ganglion), and the other radiating from it. There are six views, therefore, possible concerning the function of any single nerve encountered in the body of an animal, and as the larger nervous cords may contain threads of all the six different kinds, the physiologist has no very simple problem to solve who undertakes to determine the function of a nerve.

Certain observations made by Dr Reid on the nervous system were purely anatomical. Amongst these may be in-

cluded the comparison instituted at the Edinburgh Royal Infirmary as to the relative weight of different organs of the body. To none was more attention paid than to the brain, and among other unexpected results of the various weighings made, was the curious one, that among the adult male brains there was "found as great a difference as 28½ oz. between two brains—the one being about 12¼ oz. above the average weight, and the other about 16¼ oz. below it." Another purely anatomical investigation was into the structure of the upper portion of the spinal cord (medulla oblongata), which connects it with the brain. This portion of the nervous centres receives and gives rise to some of the most important nerves of the body, and is therefore one of great interest. Dr Reid was the first to point out the true structure and function of certain of its component parts, and later observers have ratified his conclusions.

His most important investigations, however, were those instituted in reference to the functions of the "Eighth Pair of Nerves." As the two sides of the body are symmetrical, we possess a duplicate set of all lateral organs, and, amongst the rest, of the nerves. They are counted in arithmetical order from above downwards, and those which specially engaged Dr Reid's attention were the eighth in order according to this mode of numeration.

Each half of this pair was a triplicate nerve, or included three nerves, separately distinguished as the *Glosso-pharyngeal*, *Pneumogastric*, and *Spinal Accessory*. The first named, as its appellation indicates, spread its fibres chiefly over the tongue and the pharynx, or funnel-shaped muscular tube which leads from the mouth to the gullet. The Pneumogastric is named in allusion to its sending branches to the stomach and lungs. But these are by no means the only organs over which it ramifies, and its wide and apparently erratic distribution to a number of internal organs has long led to its being named *Nervus Vagus*, or the *Wandering Nerve*. The ambiguous name (Spinal Accessory) given to the third

division of the eighth pair, sufficiently indicates how unsettled were the opinions of physiologists concerning its functions.

Before the commencement of Dr Reid's experiments, two of his countrymen and contemporaries, Sir Charles Bell and Dr Marshall Hall, besides many distinguished foreigners, had thrown a flood of additional light upon the functions of the nerves.

Sir Charles Bell, in particular, had shown that the nerves originating in the spinal cord have two roots,—the one proceeding from the *anterior* part of the cord, and consisting solely of *motific* filaments; the other proceeding from the *posterior* part, and consisting solely of *sensific* filaments. He had also shown that certain of the cerebral nerves resembled the spinal ones in having an anterior and a posterior root oppositely endowed. To Dr Marshall Hall physiologists were indebted, if not for the discovery, at least for the first full exposition of the possession by nerves of those powers of exciting reflex action, which have already been so fully referred to.

Neither Bell nor Marshall Hall, however, nor, in truth, any other observer, had succeeded in discovering to what extent the eighth pair were nerves of direct or reflex sensation or motion. One of the divisions (the glosso-pharyngeal) was thought by some to be *a* nerve or *the* nerve of taste; and some of the branches of the wandering pneumogastric nerve were so entangled with filaments from the sympathetic nerve, that the functions of the former were involved in additional difficulty.

Nor was it a question of mere curiosity what the endowments of this perplexing triple nerve were. Many dangerous and formidable diseases were occasioned or complicated by affections of its branches, which stood in the most vital relation to the organs of taste, speech, deglutition, respiration, digestion, and circulation, so that practical medicine anxiously waited for the determination of the true functions of the nerves under consideration. "The eighth pair," observes Dr Reid in the commencement of his first essay on the subject,

"are undoubtedly the most interesting and important of all the nerves of the body, both in a practical and theoretical point of view. Their lesions are attended by the most serious derangement of the respiratory and digestive processes, and bear in a prominent manner upon some of the principal doctrines in physiology. The functions of these nerves have therefore commanded a more than ordinary degree of attention, and the industry and talent of numerous observers have been directed towards their elucidation. In entering upon an experimental investigation into the functions of the three divisions of this pair of nerves, I was fully aware of the numerous difficulties attending such an undertaking, and have endeavoured to approach it with all the circumspection and assiduity which its importance and inherent intricacies require. I, nevertheless, feel very considerable diffidence in presenting the first results of this inquiry to the public, since the data which I have obtained will necessarily lead me to draw several important inferences regarding the functions of these nerves at variance with those entertained by many of the most celebrated and experienced practical physiologists. . . . In entering upon this investigation, I had no favourite theory to defend, stood committed to no preconceived notions, nor shackled by any slavish deference to authorities, but was ready and willing to give up any of my former opinions as soon as they appeared to be inconsistent with the phenomena which presented themselves; and I sincerely hope that I am not chargeable with the opposite and equally dangerous fault of seeking and hankering after novelties."[1]

The researches thus referred to, occupied a large portion of more than two years, which were spent partly in the study of the writings of previous inquirers into the subject of investigation, partly in dissections of the dead bodies of animals, but chiefly in experiments on certain of these during life, or immediately after they had been deprived of sensation. The results were as follow:—Twenty-seven experiments were made

[1] Anat., Phys., and Path. Researches, pp. 61, 62.

on dogs in reference to the glosso-pharyngeal nerve. From these observations Dr Reid finally inferred that it is—*first*, a nerve of *sensation*, through which impressions made upon the back part of the mouth, the tongue, and throat, are felt; *secondly*, and pre-eminently, that it is a reflex-sensific (or excito-motory) nerve, which by conveying to the nervous centres the impressions made upon the back of the throat by the contact of solids and liquids, determines through a motific nerve that peculiar involuntary action of the muscles of the throat, by the operation of which we swallow. It may seem strange to say that swallowing is an involuntary process. The famine-stricken beggar, not to speak of the glutton or the epicure, would wonder or laugh at the assertion. Yet it is true. As long as we please we may "roll a sweet morsel under the tongue," but if we permit it to pass backwards to a certain point, it is ingulfed beyond the power of recall. Sore throat may satisfy us of this; for in that malady the instant a little saliva touches the back of the mouth, we feel compelled to swallow, however painful the process may be; and every one knows the risks that have been run from the unintentional swallowing of pins, pieces of coin, and the like. On the other hand, we may *sit* at a Barmecide Feast, but we cannot even *affect* to swallow at it if the mouth be absolutely empty, although the smallest crumb or homœopathic globule will suffice to provoke deglutition.

Now, the glosso-pharyngeal is one of the nerves which receives and conveys the impression made by substances on the back of the throat, and thereafter reflects through a motific nerve the impulse, which, calling into action the muscles to which it passes, compels even the unwilling child to "gulp over" the apothecary's unwelcome dose.

This nerve was further found, by Dr Reid, to be one of the two[1] nerves on which the special sense of taste depends, but not, as several physiologists had imagined, the only gustatory

[1] The other, and chief nerve of taste, is the lingual branch of the fifth pair.

nerve. Lastly, it appears, that in reference to at least one muscle (the stylo-pharyngeus) concerned in deglutition, the glosso-pharyngeal is a nerve which is subservient to volition, and calls into action the muscle in question in obedience to the will.

We come next to the pneumogastric nerve; "Dr Reid's inquiry into which," says Dr Carpenter, "is perhaps the most laborious and scrutinising investigation of the functions of any single nerve, ever carried through by any single physiologist." This nerve sends branches to the external ear, the throat and the gullet, the heart, the stomach, and the lungs; and in the course of its ramifications communicates or interlaces with various of the other cerebral or spinal nerves, and also with the great sympathetic or ganglionic nerve. The functions of the pneumogastric nerve are as varied as its distribution. In the first place, it is a nerve of sensation. It is in addition a nerve of motion, furnishing the branches which excite to action the muscles of the back of the throat (or pharynx) in swallowing, when the impression made by food or drink is transmitted to the nervous centres by the glosso-pharyngeal nerve, in the way already described.

In a similar manner it endows the gullet at its upper part (*i.e.*, below the pharynx) with the power of swallowing; only, here consciousness is not at work. We have seen already the process by which a morsel is gulped over; but it must pass through the membranous tube of the gullet, which is several inches in length, before it can reach the stomach. Beyond the back of the throat, however, we lose all consciousness of a morsel or a draught, whether grateful or distasteful. It is conveyed to the digestive organs by a process, over which we have not only no control, as was the case in the first stage of swallowing, but of which we are quite unaware. The action, in short, is one of those *automatic* ones which abound in the lower animals. It must not be supposed that the food *drops* into the stomach. We can swallow in any position. The unfelt contact of the food with the gullet, determines an impression to pass along one nerve to the central nervous

organs, and this impression, without producing a sensation, determines a reverse motific impulse to pass along another nerve, which calls into action the muscles of the gullet, so that it transfers the food to the stomach. The nerves concerned in this action are both included in the fibres of the pneumogastric. I have referred to this double action, because it is one of the few unquestionable *automatic* actions which occur in health in man; and to Dr Reid belongs the merit of first pointing it out, and of solving a problem which had greatly interested, and considerably divided physiologists.[1]

A similar double relation was shown by Dr Reid to belong to those branches of the pneumogastric nerve, which ramify over the upper part of the windpipe, and guide the movements of the organs connected with it, which are concerned in the utterance of sound, in coughing, and in some other similar functions; but it is impossible to explain this point, without a more extended reference to the minute anatomy of the windpipe, than would be suitable.

The name *Pneumogastric* implies, that the nerve so named has an important influence over the action of the breathing organs and the stomach. Before Dr Reid instituted his investigation, the greatest diversity of opinion existed concerning its influence over these organs. He made it a subject of most careful inquiry. Previous observers had contended that the division of the nerve determined a morbid change in the chief organs of respiration, which generally ended in death; and as the question of the truth of this view had a direct bearing on many important points in the practice of medicine, it was most carefully looked to. It is impossible to condense into a few sentences, or to make intelligible to unprofessional readers, results which occupy more than one hundred pages. The general conclusion was, that the pneumogastric nerve acts indirectly, though not the less importantly, on the organs of respiration.

[1] See Dr Carpenter's reference to this. "British and Foreign Medico-Chirurgical Review," April 1849, p. 326.

Through it in great part is conveyed to the brain the impulse originating the uneasy sensation which the respiration of impure air occasions, and which, when it rises to a maximum, is known as the "sense of suffocation." When this is felt, we instinctively call into action the muscles which take part in respiration, and pant and gasp; in other words, we increase by an effort the supply of air to the lungs, so as to secure that alteration in the blood which is essential to the maintenance of life. An injury to the pneumogastric nerves, equivalent to their division,[1] prevents the sense of suffocation from being felt, except imperfectly, so that the subject of this injury is like one in a state of profound sleep close to a fire, who may be fatally burned without being conscious of it. The effect, accordingly, of division of the nerves in question, is to make the breath be drawn more slowly, so that but a small supply of air enters the lungs. The imperfectly aërated blood circulates in consequence very sluggishly, the lungs become gorged, and morbid changes gradually develop themselves, ending sooner or later in death.

Still more important were Dr Reid's researches into the action of the pneumograstic nerve on the stomach. One of his predecessors in experimental physiology (Dr Wilson Philip), had *apparently* demonstrated that digestion is at once arrested if this nerve is severed; and further, that if a current of electricity be sent from the point of division along the nerve towards the stomach, digestion will proceed as well as ever. Upon this supposed fact the most extravagant conclusions were founded, both by professional and unprofessional writers. More than one popular author taught, on the authority of the delusive experiments in question, the notable doctrine that Thought is electricity, and that we could afford to dispense with brains, provided our skulls and

[1] In experimenting on the functions of nerves in living animals, it is sufficient to divide the nerve without otherwise injuring it. The section of a nerve is as effectual in arresting its functions, as the section of a telegraph wire, in preventing it transmitting electricity.

backbones were duly fitted up with galvanic batteries. Even the ancient school of philosophers, who held that the soul was in the stomach, did not contend that digestion was an intellectual act, nor would the fact that this merely vegetative function could be discharged by electrical currents sent along the nerves which pass from the brain to the stomach, have warranted any inference as to the mind, of which the brain was *also* the organ, being merely an electrical emanation. But on this it is unnecessary to dwell. The supposed fact was shown by Dr Reid to have no existence. Dogs, in which the connection between the brain and the stomach, so far as the pneumogastric nerve was concerned, had been completely cut off, were found, in several cases, to recover the power of digestion, and to acquire flesh and strength. Scientific physiologists now universally acknowledge the accuracy of Dr Reid's experiments, and totally dissent from the conclusion that digestion is merely an electrical process, and the pneumogastric nerve no better than a galvanic wire.

The third component of the so-called eighth pair of nerves, named the spinal accessory, though much less widely distributed than the pneumogastric, is yet sufficiently intricate to have occasioned much perplexity to physiologists. Sir Charles Bell, by pushing too far certain of the conclusions warranted by his beautiful investigations into the functions of the nervous system, had led his brethren astray in reference to it. He supposed it to be a reflex motific nerve, which determined the involuntary, instinctive, or automatic action of certain muscles of the throat, neck, and back, which take part in respiration. Dr Reid, on the other hand, demonstrated, that the external of the two primary branches into which it divides is a *direct* motific nerve, which does not reflect an uneasy sensation, or obey an instinctive impulse, but is almost solely devoted to transmitting volitions. It contains, however, a few sensific fibres.

The functions of the other or inner branch of the spinal accessory, Dr Reid did not succeed in satisfactorily ascertain-

ing, and they are yet somewhat doubtful. This branch joins the pnuemogastric, and confers upon some of its ramifications their power to call into action the muscles to which they pass. From the observations of later experimenters than Dr Reid, on whose researches he comments in the postscript to his last paper on the spinal accessory, it seems highly probable that through it we are able to will into action certain of the more important respiratory muscles which are employed in the utterance of vocal sounds.[1]

The brief sketch which is now closed gives a very imperfect idea of the nature of Dr Reid's physiological researches. It would be difficult, indeed, with any amount of space at my disposal, to convey to unprofessional readers a just impression of the quality and amount of his labours. There are some points, however, which fall quite within the scope of the most general reader, to which I would briefly refer; for in many (I had almost said in all) respects the "Anatomical, Physiological, and Pathological Researches" are a model of what an original scientific inquiry should be. They are, as a whole, remarkable for the extremely conscientious and truthful spirit in which they were conducted. Dr Reid began an inquiry by carefully studying all that had already been written on the subject. This is not a common practice among experimenters, and we can scarcely expect that it should be. It is rarely, indeed, that an aptitude for original observation, and a taste for literary research, are found equally developed. One might at first imagine that they were, but the appearance of their co-existence is too often a pretentious deception. It looks well to have a page scattered over with asterisks and printers' daggers, pointing to an apparently most erudite foot-row of exhaustive references in every language. But how very few of the authorities quoted, the writer himself has, in many cases, consulted, and how possible it is to find him ignorant of the very language in

[1] Anat., Phys., and Path. Researches, pp. 289, 290.

which some of his authorities write, and how common it is to encounter references borrowed, without acknowledgment, at second, third, or even fourth-hand, those who have been behind the scenes at the rehearsal of many a very learned-looking volume know too well.

Dr Reid did not practise this dishonest mockery of literary research. He had a considerable tinge of bibliomania, as we have already seen, and loved old books. He longed to know what the wise ancients had done for his favourite science, and delighted to dwell on the abundance and value of their labours. He did so from a sense of duty and honest fair-dealing to those whose memories were at the mercy of their successors; but not less from a spirit of reverence. This appears from his works, but it has been still more specially pointed out to me by his intimate friends Drs Simpson and Duncan. The latter tells me that before Dr Reid entered on an experimental inquiry, he studied the previous writers on the subject with the greatest care, and that he often declared that if we read the old authors more carefully, we should find many things in them that we supposed to be new. There is none of the sciences of which this is not true.

He was equally careful of the reputation of his contemporaries, whom it often costs a writer a greater effort to praise, than it does to praise Galen or Aristotle, who are not running a race of rivalry with him. To the merits of his more immediate competitors engaged in the same researches as himself he was scrupulously just, and when the rare event occurred of his mistaking, through misapprehension, their opinions, he was at the greatest pains to make amends as soon as he discovered his unintentional error. On the very few occasions on which his rights as a discoverer were disputed, he defended his claims temperately but firmly, and these claims have in every instance been ratified by his successors.

His method of research was as purely inductive as it could well be. As he said of himself (and the sayings of so modest

a man concerning himself are of much higher value than egotistical judgments generally are), "he had no favourable theory to defend, stood committed to no preconceived notions, nor shackled by any slavish deference to authorities, but was ready and willing to give up any of his former opinions as soon as they appeared to be inconsistent with the phenomena which presented themselves;" and he expressed the hope that "he was not chargeable with the opposite and equally dangerous fault of seeking and hankering after novelties." Patience, perseverance, caution, intense truthfulness and honesty, an open, unprejudiced, accurate eye, a deliberate purpose in trying experiments, and great care in their performance, were his only but his ample weapons of discovery. He worked slowly, and was almost reluctant to draw a conclusion. More than one of the witnesses of his experiments has stated to me, that long after every one else was satisfied of the validity of an inference, which Dr Reid also saw might be drawn, he still demanded more proof, and went on with his trials. On this point Dr Alison writes me,—"I used sometimes to think that he did not sufficiently observe the comparative value of facts as tending towards inferences, and lost time and wasted labour in consequence, but it is very likely that I did him injustice in this; and, at all events, this disposition of his mind was a clear indication of that patient determination to master the whole facts of any subject to which he applied himself, and to allow nothing but a thorough knowledge of these facts to bias his judgment in regard to it, which peculiarly distinguished his scientific character, and which has now, I believe, given a high value to his opinion and authority in the estimation of all well-informed physiologists."

Distrustful as he was of hasty conclusions, and slow in drawing any, he had nothing in his character of that weak scepticism, which stops short at a dilemma, and proclaims that it is impossible to discover whether a question should receive Yes or No in reply. He always ended with a conclusion, generally a decided one, and if he drew none it was

not because he was hopeless of any, but because he saw no early prospect of prosecuting the researches which he felt certain would solve the problem. He was farther remarkable for the willingness with which, at all times, he submitted his experiments to the inspection and criticism of others competent to decide on their value. He generally invited some of his medical friends to witness his more important observations, and those of them who were specially devoted to physiology were always welcome to come uninvited. This was in keeping with the spirit of practical medicine, which more than any other calling realises the idea of a scientific republic. The practice of openly treating the sick in public hospitals with a view to the instruction of the younger members of the profession, has fostered a similar publicity in reference to inquiries connected with all the branches allied to medicine. At a large medical school like that of Edinburgh, there always exists among the teachers and senior students, a body fully able to criticise and appreciate any real or supposed discovery in medical science. It is to the credit of the anatomists and physiologists of the country that, like Dr Reid, they have not been slow to avail themselves of this means of testing the validity of their conclusions. It could be wished that the same spirit prevailed more among the cultivators of all the sciences.

There remains another aspect of Dr Reid's researches too important to be passed over without special reference. Allusion has already been made to the infliction of suffering on living animals, inseparable from the prosecution of such investigations as he had undertaken. This suffering was not merely *incidental* to dissections which were equivalent to severe surgical operations, but in many of the experiments recorded was deliberately inflicted. Since the introduction of chloroform, merciful physiologists have been able to solve some of the vexed problems of their science at a smaller expense of animal agony than before the discovery of anæsthetics; and few would have been more forward to employ

them than Dr Reid, had they been available in his experiments. But in many of them, even if anæsthetics had been known at the period of his observations, they could not have been employed. The object of various of his trials was to discover whether certain nerves were instruments of suffering (*i. e.*, nerves of sensation) or not, and it was essential to the settlement of this question that the animal experimented on should be left free to exhibit all the pain he felt, and should be expressly subjected to torture.

The question thus brought before us, how far we are at liberty to inflict suffering on the lower animals, as a means of extending the resources of the healing art, is one of the difficult problems of medical, and I may add, of Christian ethics. It was the subject of grave consideration to Dr Reid, both in the course of his physiological researches, and long after when he was himself a sore sufferer, and was reviewing all the events of his life in the dawning light of the world to come, to which he was fast hastening. His example, also, as an experimental physiologist, is likely, and justly so, to have great weight with his successors, especially the younger members of the medical profession. His biographer, accordingly, cannot avoid making some reference to a matter so closely connected with the subject of his sketch; and in relation to which a lower, and less defined standard, than could be wished, is acknowledged among medical men.

In discussing this question, I wish at the outset to urge that it is one in which the moral character of the entire medical profession is concerned, not merely that of the comparatively few members of it, who, like Dr Reid, are experimental physiologists. All who make use of the information obtained by experiments on living animals,—even the theoretical chemists and botanists who hang on the skirts of the profession,— are involved in the moral consequences of justifying and encouraging them, unless they have protested against them; and such protests have been very rare, and seldom very judicious. Further: not merely surgeons and

physicians, including their scientific coadjutors, but likewise the patients of the former, who have consciously profited by treatment largely founded on experiments on living creatures, are involved in the guilt (if guilt there be) attaching to the performance of such experiments. The late amiable and excellent Charlotte Elizabeth, horrified by the recital of some of the wanton cruelties of Magendie, the French physiologist, called upon all Christians to engage not to employ the services of any medical man who had participated in the torture of animals. This proposal was at least consistent; but the earnest lady who made it was probably not aware how utterly impossible it would be to find a single surgeon or physician, whose practice was not guided by principles founded more or less upon experiments on living animals. She was heroic enough to have abided the consequences of declining the services of medical men in these circumstances; and so, doubtless, would not a few others, were they equally persuaded that it was a Christian duty to avoid even remotely countenancing the wilful infliction of suffering on animals. But that this is an extreme view of Christian obligation, the majority probably of thoughtful persons will feel convinced. Mankind, whether Christians or not, are at one in asserting their dominion over the beasts of the field; and that this includes the power of life and death need not be argued. The gentle Cowper's well-known lines would probably be assented to by all:—

> "The sum is this. If man's convenience, health,
> Or safety interfere, his rights and claims
> Are paramount, and must extinguish theirs.
> Else they are all—the meanest things that are—
> As free to live, and to enjoy that life,
> As God was free to form them at the first,
> Who in His sovereign wisdom made them all."

And as the infliction of death almost necessarily implies the infliction of pain, the right to occasion the latter must be considered as claimed also. We need only, therefore, inquire what the limits are within which torture may be

inflicted? On this subject it is vain to look for any absolute canon; and it would be idle to multiply rules minutely. Two great principles may be laid down as imperative, and the rest must be left to the individual conscience. 1. Pain should be inflicted only to serve a useful end. 2. Pain should be inflicted as sparingly as possible. These were the principles which guided Dr Reid in his experiments; as the following quotations from the introduction to his observations on the eighth pair of nerves will show:—"In stating the experiments, I shall enter more fully into the details than many may think necessary, as it appears to me, that it is an object of essential moment to mention all the circumstances under which any important experiment is performed in physiological investigations; . . . and I am convinced, that if this plan had been more fully followed, many a controversy might have been avoided, *as well as much animal suffering spared.* . . . It may appear to some that I have repeated many of those experiments with unnecessary frequency, and a wanton sacrifice of animals. But I naturally felt diffidence and distrust in the accuracy of the results I obtained, when opposed to those of more experienced observers; and it was only after repeated and careful examination of the phenomena, that I could feel myself justified in calling these in question. It is also sufficiently obvious, that nothing is more injurious to the progress of science than hasty and partial observations; and I was anxious to avoid, as far as I possibly could, adding to that mass of conflicting evidence which there is already so much reason to deplore. Besides, as every false observation requires additional experiments for its refutation, I felt that, with less extended opportunities of witnessing the phenomena under examination, I must incur a greater risk, not only of throwing obstacles in the way of the progress of truth, but also of occasioning *a useless infliction of animal pain.*"

Within the limits here assigned by Dr Reid, it would be folly to assert that there is any breach of the laws of God or

man in subjecting animals to suffering. It would be easy to address an *argumentum ad hominem* to those unprofessional assailants of the humanity of physiologists, who have no scruple in abetting the cruelties of the ministers of the kitchen; and even the vegetarian, unless his conscience is clear of ever trapping a mouse or slaying a wasp, would come within the scope of the appeal. Only the Hindu, who builds hospitals to vermin, would be free to cast a stone at us. It is no part of my argument, however, to justify one class of cruelties by another, but only to shut the mouths of those who seat themselves on the judicial bench, when they should stand among the prisoners at the bar. The question, what is the extent of our kingdom over the lower animals, is one which must have a place in every code of natural ethics, and in every interpretation of Christian ethics, and each of us has occasion to answer it to his own conscience and to God.

The answer of every honest respondent would include the confession that he thought himself at liberty to inflict pain (apart from that involved in slaughter for food) on the lower animals where this was essential to certain useful ends. The universal practice of mankind shows this. Leaving altogether aside every branch of sporting, which finds its only justification in the health, the courage, the endurance, and other manly qualities which it begets in the sportsman; and likewise all the subjugation to unnatural confinement of wild animals not susceptible of domestication, which fancy or popular science fosters; and still more the employment of the beasts of the field in war:—the point may safely be rested on the liberty which every one would feel to shut the gates of mercy when urging a horse, though he were the most noble, faithful, and generous of steeds, on an errand of life or death.

A most striking and vivid picture of such a scene is given in Robert Browning's poem, "How they brought the good news from Ghent to Aix," in which three horsemen are

depicted as setting off from the former place at full gallop for the latter.

> "Not a word to each other; we kept the great pace,
> Neck by neck, stride by stride, never changing our place."

First one horse and then another drops down dead.

> "And there was my Roland to bear the whole weight
> Of the news which alone could save Aix from her fate,
> With his nostrils like pits full of blood to the brim,
> And with circles of red for his eye-sockets' rim."

The good horse Roland reaches the distressed city in time, and is rewarded by the grateful citizens with their last measure of wine.[1]

None but a madman would spare the animal that carried to a man bleeding to death, the surgeon who could save his life; or hesitate to urge to the uttermost the horses that were carrying the news of an invasion, or an armistice, or even that only dragged the fire-engines that might arrest a fire. It would assuredly be counted mistaken mercy, and even culpable homicide, if the bearer of a reprieve to a criminal condemned to death, arrived too late to save human suffering and life, because he lingered to lessen the sufferings of his over-driven charger. No moralist, whatever the basis of his morality, could acquit the tardy messenger on such an errand, unless he counted a beast's life of more value than a man's, and denied that animal agony was permissible even where it spared or alleviated human suffering. The Christian moralist can appeal to the words of his Great Law-Giver, who, whilst in the utterance of a love which all the living creatures of a universe cannot exhaust or distract, he declared that not one of the smallest and most despised of birds is "forgotten before God," added to his brethren, "ye are of more value than many sparrows;" and again, "Consider the ravens: for they neither sow nor reap; which neither have storehouse

[1] The reader should consult the poem, which is graphic in the highest degree. It is reprinted in the Poet's collected works.

nor barn; and God feedeth them. How much more are ye better than the fowls?"

No further sanction is needed for the experiments of the physiologist (within certain bounds) than the principles referred to afford. To take one example; a very large class of physiological experiments consists in the administration of powerful chemical substances to animals, with a view to discover their medicinal action and value. Similar to these trials, and necessarily still more productive of suffering, is the administration to animals of substances known to be poisons, with a view to observe minutely the symptoms they occasion, so as to be able to recognise and alleviate them in the human victim of poisoning, and to detect and expose the crime of the poisoner. Now there are literally only two ways by which the action of powerful drugs or poisons can be ascertained, the one their administration to animals, the other, their administration to human beings. A widespread delusion prevails among unscientific persons, to the effect that the chemist, by merely analysing a substance can tell its properties. So far, however, is this from being the case, that sulphuric ether had been known for centuries, and chloroform for years, before their anæsthetic virtues were discovered. Our knowledge of the influence of such agents on living creatures, rests, in every case, at first or second hand, on direct trial of their influence on them. The physicians of preceding generations had no hesitation in trying such experiments on their fellow-men, selecting condemned criminals and lunatics as the subjects of them.

Such proceedings were in keeping with the spirit which required a surgeon, to the disgrace of medicine, to stand by the rack, and measure out the non-fatal maximum of judicial torture. But we have grown greatly more merciful than our ancestors, and it is only upon themselves, so far as human beings are concerned, that our medical and scientific men try dangerous experiments. They have not been slow to perform hese. The demonstration of the anæsthetic properties of

chloroform was the result of a series of hazardous trials made with many deadly substances on the person of its introducer and his friends. Sir Humphry Davy periled his life more than once, in the experiments made by him on the respiration of the gases, which led to the discovery of the curious action of laughing gas. Three, if not four, chemists and medical men have died by breathing a single gas (arseniuretted hydrogen). Several have perished by incautious trials of other poisons, and of peculiar systems of diet. Again and again, medical men have been found willing to inoculate their bodies with the infectious matter of loathsome diseases; to sleep in dresses taken from the dead bodies of plague-patients; and otherwise to risk health and life to the uttermost. To such experiments, however, a limit is soon found. Scientific suicide is as morally reprehensible as any other; and they who proved their estimate of the necessity of experiment on living creatures, by undergoing suffering, and risking life to extend the resources of medicine, are to be acquitted of the charge of cruelty when they are found substituting animals for themselves. The *considerate* poisoning of a few dogs and other animals with arsenic, prussic acid, and the like, has furnished the means, directly and indirectly, of saving the lives of many men, and we have as much warrant for the animal suffering we thus occasion, as for any part of that which we daily inflict on the creatures around us.

To take another, and even more striking example. A common disease of the arteries, called aneurism, when it occurred in the blood vessels of the limbs, was treated, till late in last century, by cutting off the limb, although, a small part of its artery excepted, it was quite sound. Much severe suffering, mutilation, and loss of life were thus occasioned. A great physiologist and surgeon, John Hunter, was led by his profound study of anatomy to think it probable, that by the simple device of tying a silk thread round the artery in a certain part of its course, he should be able to cure the disease, and save both life and limb. He made trial, accord-

ingly, on living dogs; and finding that in them the passage of the blood along the main arteries of a limb might be permanently arrested at a particular point, and yet the animals completely and rapidly recover, he proceeded to do the same with the human sufferer from aneurism, and thereby, at the expense of a very small amount of pain, cured the disease and saved the limb. The new operation which he thus introduced, is now, I may say, universally practised in surgery. No one in his senses will say that the infliction of a little transient pain on a dog some eighty years ago, has not been amply compensated by the untold sum of human agony which it has since prevented; or deny that he who tortured the living dog, did, not merely a lawful, but also a meritorious act. One could almost imagine the dog proud of the service it had rendered mankind.

It may be said that this is an extreme case, and so in some respects it is, though by no means a singular one. But even if it is, yet it sanctions the principle, which is all that I contend for—that there are occasions on which the infliction of suffering on the lower animals may, so far from being intentionally cruel, be the fruit of an enlightened and profound humanity.

It was in such a spirit that Dr Reid experimented, I will not say invariably, but generally. He afterwards confessed to having thought much of scientific fame in his labours, and it would be untrue to say that the alleviation of human suffering was the motive always before him when he inflicted pain on the lower animals. But his researches, considered as a whole, were deliberately planned with a view to enlarge the resources of the healing art, at as small an expense of animal suffering as would certainly secure this. And if any are disposed to say that some of his experiments have extended only our purely scientific knowledge, they must remember that we are not to apply to the torturing of animals, any more than to other methods of research, a *Cui Bono* question too early.

To any such query, Dr Reid might justly have replied, that his investigations were certain to throw new light on the important functions of respiration, deglutition, digestion, taste, and speech, besides many other living actions, a true understanding of which could not fail to increase greatly our means of alleviating formidable diseases. He had mournful occasion to illustrate in his own person, during his final illness, the importance to medicine of more than one of his researches.

On this point it is unnecessary to insist at length. The doctrine that every addition to our anatomical and physiological knowledge is an addition to our therapeutic skill, is plainly liable to abuse; and it has been greatly abused; but not by Dr Reid, whose characteristic conscientiousness guided him in this, as in his other labours. It must be added, also, that by nature he was the very opposite of cruel, and had no pleasure in witnessing suffering. As a medical adviser, he was beloved by the poor for his gentleness, kindness, and attention to the sick, especially to children. He was fond of the lower animals, and indulgent to them. At St Andrews, the teachers and students had a monthly holiday; and, before he was married, he generally spent it at Anstruther, where he could enjoy a romp with Mr Goodsir's splendid Newfoundland dog. In his own house, he had always pet cats and dogs about him, and he was as ready as Sir Walter Scott to rise from any occupation to humour their whims, by opening or shutting doors.

I cannot, however, allude to him as an example of the spirit in which physiological experiments should be conducted, without some further reference to the necessity for a larger infusion of humanity than yet prevails, into the hearts of those who conduct them.

The seniors of the medical profession in this country have, speaking generally, been mindful of the influence of their example on its younger members, and have guarded themselves against seeming to justify the wanton infliction of suffering on animals. It has been otherwise on the continent, and especially in France, where some of the most eminent

physiologists have gained an unenviable notoriety as pitiless torturers.[1] It must be acknowledged, also, that the constant reference in the text-books of medical students to experiments on animals as things of course; the prizes offered at the great medical schools for experimental physiological investigations; the practice in several of the Continental institutions of experimenting on animals before the assembled pupils; and the general, if not total, absence, on the part of their preceptors everywhere, of any caution as to the abuse of our supremacy over the lower animals,—begets, or tends to beget, in the minds of the students the belief that they are entirely at their mercy. Against such a state of matters I earnestly protest, as at variance with every sound principle of medical ethics. Setting, in the meanwhile, the dictates of Christianity aside, I would urge upon every member of the medical profession, whether claiming, or deserving, to be styled a Christian or not, two considerations, which should prompt to mercy towards the lower animals.

First,—Against the good effects of adding to the stores of the intellect, by experiments on animals, must be set off, the hardening of the heart which they cannot but occasion. The same principle which excludes the butcher from the jury-box, should make us afraid of blunting the sympathies of our young surgeons, and making them indifferent to suffering, or heedless in inflicting it, by too great a familiarity with the

[1] I am not anxious to make hasty and sweeping charges, but so many medical men have spoken to me of the needless inhumanity of certain French experimenters, who would not take the trouble to put out of pain the wretched dogs on which they experimented, even after they had served their purpose, but left them to perish of lingering torture, that I cannot doubt the fact, or leave it unnoticed. It is pleasing to contrast with the merciless horrors enacted by Magendie and others in *public*, the well-known reluctance with which Sir Charles Bell tried in *private* those experiments on the functions of the nerves, which have thrown such a flood of light on important diseases,—the anxiety which he showed to abridge the sufferings of the animals subjected to experiment, and the solicitude which he displayed in justifying to his readers the importance of the views he was putting to the test, and the value of the conclusions which his experiments warranted.

silent agonies of dumb animals. Children—oftener, perhaps, from sheer mischief, and the desire to gratify their latent sense of power than from the wish to give pain or any just conception of the wrong they are doing, are very cruel to living creatures. What was thoughtless mischief in the child often becomes deliberate cruelty in the schoolboy, who is by and by the student—more anxious to assert his freedom than always solicitous to guard against hardening his heart. He needs rather to be repressed than encouraged to make hasty experiments on animals, which are likely to be fruitless of useful results in his inexperienced hands.

I cannot, accordingly, but think that the practice of experimenting on animals in the presence of a miscellaneous class of students of various ages, is reprehensible, unless on some few important, exceptional occasions. Such is plainly the feeling of the medical profession in this country, including the students; who have revolted at the practice where it has been tried. Dr Reid, in his zeal to benefit his pupils, endeavoured, in his earlier courses of lectures, to induce them to look with favour on the occasional performance of experiments on living animals, but without success. And when it is considered that but a fraction of the pupils of even a limited class can intelligently follow the steps of an experiment on a small animal, whilst the majority are witnesses only of the bloodshed and mangling, the writhings and cries of the tortured creature, it must be apparent that such spectacles can rarely, if ever, compensate for the evil they do, in shocking, or still worse, blunting the feelings of the mass of the spectators, by the slender amount of instruction they convey to a few. In England, their effect is painfully to excite the humanity of the onlookers: in France, I fear it must be to deaden it. A select jury of competent witnesses, such as Dr Reid invited to his original researches, should always, if possible, be present, as one of the most certain modes of making a single experiment suffice for many observers; but a miscellaneous audience should not be horrified or hardened by such spectacles.

It could be wished, also, that the invitations to all and sundry among the students of medicine of a College or University, to imbrue their hands in innocent blood, as candidates for honours or medals, were more guarded than at present they are. A premium has thus been put upon animal torture and animal murder, at the hands of the most inexperienced, and the most unskilful members of the profession, which has been productive of serious evils. Students have naturally thought that if *one* experiment was valuable, *two* experiments would be still more so, and three, six, or a dozen, best of all. A. kills six dogs—numbering each slaughter in italics and Roman numerals, *Experiment* I., *Experiment* II., &c., &c.,—B. kills seven, C. eight, and D. makes sure of the prize, by killing the dozen. This counting of heads, as in the days when a sum of money was offered for every wolf's skull brought to the treasury, has unavoidably led to much unjustifiable and unprofitable cruelty. It is time that something be done to check it, by suitable caution and advice to students; and few things would be more effectual than the public condemnation of injudicious and needlessly cruel physiological experiments, even when these occur in essays deemed worthy of reward. The use of anæsthetics might, and should, be more resorted to by experimenters on animals than it has yet been. Our central regulating and examining medical bodies have much in their power in reference to this, and owe it to the character of the profession for humanity, not to tempt young men to let desire for distinctions induce them to be thoughtlessly, much less deliberately, cruel.

Secondly,—Cruelty to the lower animals is as much at variance with the intellectual as the moral spirit of medicine. Its constant aim as a science is to learn better and better the conditions of life and health—its constant aim as an art to vanquish disease and death. These central ideas of scientific and practical medicine are mocked and disowned by the wilful and needless infliction of injury or death at the hands of a medical man on a single creature, however humble

in the scale of being. "A child may kill a butterfly," but worlds of men cannot revive or reproduce it; and the physiologist, who best of all men can realise this truth, should be the very last to show indifference to it. There is something as incongruous in a physiologist wantonly injuring or slaying an animal as there would be in a sculptor turning an iconoclast, or a glass-stainer a window-breaker. Even though an animal could be maimed and slain without the infliction of suffering, it should not be mutilated or slaughtered rashly. So wonderful a piece of Divine art and workmanship, as every living creature is, should be reverently dealt with, and not hastily marred or destroyed by the hands of him who is most profoundly conscious of the exquisite nature of the work he is marring. The fundamental law of moral responsibility, which declares that from those to whom much is given much will be required, demands from the physiologist a greater reverence for life than from his more ignorant brethren. This obligation, I fear, is almost totally forgotten or neglected by medical men, yet if there be an established principle in medical ethics, it is one.

The two considerations thus adduced,—the one, the violence done to the spirit of humanity which presides over the pain-assuaging, death-averting ART of Medicine, by the deliberate infliction of suffering and death on animals; the other, the wrong done to the intellectual reverence for life, which is the natural and desirable accompaniment of that profoundest attainable acquaintance with its nature and conditions, which is the object of the SCIENCE of Medicine,—should temper with wisdom and mercy the researches of experimental physiologists.

But to the Christian physiologist pleadings more solemn and sacred can be addressed than we are free to use to others; and in this country, where an increasing religious earnestness pervades all ranks of the medical profession, and the great majority claim to be Christians, we can fairly ask them to consider what obligations this claim imposes upon

them in the matter of humanity to animals. An unintermitting stream of mercy towards living creatures runs through the whole Bible. Even the stern old Levitical Law, with its condemnation of many animals as unclean, its repeated sacrifices, its recurring sheddings of blood, and swift and fatal judgments upon human offenders, nevertheless, enforced provisions for the merciful treatment of living creatures, in keeping with the cities of refuge which it opened for the hunted manslayer. An awful tragedy and mighty propitiation were shadowed forth in the slaying of every paschal lamb; and none could learn a lesson of cruelty from the slaughter "of bulls and of goats," when their death at the hands of the priest was invariably connected with the declaration, "that without shedding of blood there is no remission" of sins. Lest, however, the meaning of the symbolical sacrifices should be over-looked by any, or indifference to animal suffering be generated by them, the inspired Hebrew Lawgiver made special provision for the welfare of even humble creatures. The bird-nesting boy might take the young but not the dam with them; the hungry ox treading out the corn was not to be tantalised with the sight of grain which a muzzle kept it from tasting; the patient ass was not to be yoked in the plough with the long-horned eastern bullock, which would infallibly gore it. Needless cruelty was interdicted; a spirit of kindness was inculcated; "the merciful man" was declared to be "merciful to his beast." Nineveh was spared, for a season, because, besides other inducements to mercy, it contained "much cattle." No prophet but Balaam the unrighteous is depicted as acting cruelly to an animal, and he only to be reproved by his very ass.

And when that system, which was only a "shadow of good things to come," had "decayed and waxed old, and was ready to vanish away," He who brought in a new hope and a better covenant came, though a King, "sitting upon an ass, and a colt, the foal of an ass," grudging not the fox his hole, or the

bird of the air his nest, though He himself had not where to lay His head. He proclaimed that it was God who clothed the lily more gloriously than Solomon, and fed the ravens and the young lions when they cried to Him. He likened His own deep love for His brethren to that of the mother-hen gathering her brood under her wing, and announced Himself as the "Lamb of God that taketh away the sins of the world," and the "Good Shepherd, who layeth down His life for the sheep." Every thoughtful Christian must feel, that the way in which the Saviour referred to so many of the lower animals invests them with a sacredness in our eyes, and entitles them to care and kindness. And we have His precept as well as His example. Who will doubt that every living creature was entreated for in the benediction of the Great Preacher, "Blessed are the merciful, for they shall obtain mercy?"

When we further consider how many and how heavy are the woes which the sins of mankind have entailed on animals, so that the whole creation groans and travails for man's guilt, we must feel if that we really mean anything when we say that, as Christians, we hate sin and strive after holiness, there is a solemn injunction laid on us, not wilfully to add to the burden of suffering which, since the day when Adam fell, has rolled its cruel and increasing weight over all the innocent companions of his fall. The most lawful of experiments on a living animal, in which the means of relieving human suffering are purchased at the cost of inflicting suffering on animals, would not have been needed but for "man's first disobedience." A reparation is owing to the animal kingdom at the hands of man (if he can make it) even for the most permissible inflictions of torture upon its subjects; and as amends cannot be made, it becomes us to be very scrupulous in adding to a debt which we can never pay.

What recompense He whose tender mercies are over all His works may make to His lowlier subjects for the wrongs man has done them, does not with certainty appear, although the New Testament seems, not obscurely, to promise a full

compensation to the "creation groaning and travailing together till now;" and the animal happiness of Eden may be exceeded in the experience of the creatures who shall occupy the "new earth, wherein dwelleth righteousness." But even if we were certain that those good men reason justly who have changed a fond wish into the willing belief, that all the lower animals shall be revived, and made painlessly immortal in a future state, it never could justify cruelty to them here. The law knows no exception, "that we are not to sin, that grace may abound."

Lastly,—Throughout the Scriptures, but especially in the New Testament, we are called upon to measure out to others the measure we seek to be meted by; to forgive, if we hope to be forgiven; to be merciful, if we expect mercy; and although such commands have reference mainly to our dealings with our fellow-men, they lay down a very plain principle of procedure towards the lower animals. They might further plead with us, as we are permitted to plead with Christ, that the remembrance of the sufferings we have undergone, as well as the anticipation of those we may undergo, should make us sympathise with the agonies of every creature. We have a Great High Priest that is passed into the heavens—Jesus the Son of God, who is "not an High Priest that cannot be touched with the feeling of our infirmities, but was in all points tempted like as we are," and who, "in that he himself hath suffered, being tempted, is able to succour them that are tempted." We are thus taught that our Saviour, although now exalted far above all principalities and powers, and every name that can be named, yet, because He once was a man of sorrows and acquainted with grief, still looks with the deepest compassion upon all who suffer, and is ready to offer them His divine sympathy. With reverence I would urge, that there is an example, as well as a lesson for us, in this aspect of the Saviour's compassion for men. Inasmuch as we partake with the lower animals of bodies exquisitely sensitive to pain, and often

agonised by it, we should be slow to torture creatures who, though not sharers of our joys, or participators in our mental agonies, can equal us in bodily suffering. We stand by Divine appointment, between God and his irresponsible subjects, and are as gods unto them; and we should strive to be as merciful to them as God is to us. They are patient and obedient to our caprices, and forgetful and forgiving of the wrongs we do them; and they may claim gentleness at our hands, when we who have rebelled against the most gracious of masters, have yet found compassion and mercy. "The ox," saith the prophet, "knoweth its owner, and the ass his master's crib; but Israel doth not know; my people do not consider." They have taught us a lesson of obedience to God, and He has taught us a lesson of kindness to them. We shall be worse even than the forgiven debtor, who showed no mercy to his creditor, if we wrong servants who have excelled us in faithfulness, or fail in compassion for the dumb creatures of God, which he has committed to our care.

> "He prayeth best who loveth best
> All things both great and small;
> For the dear God who loveth us,
> He made and loveth all."

It remains only to close the record of the intellectual life of Dr Reid, by a reference to the observations in natural history, which were his latest scientific labours. A perusal of Dr George Johnston's fascinating "History of British Zoophytes" was the chief occasion of Dr Reid's first searching the bay of St Andrews for marine animals. He put himself in communication with Dr Johnston, who writes to me, "All (or all but one) of Dr Reid's papers in the Annals of Natural History were transmitted through me. I had never occasion to make a single alteration on any of his much prized communications; and from the first it was very obvious that he knew more of the subject than I did." [1]

[1] Dr Johnston, whose lowly estimate of himself as a naturalist, would not have been sanctioned by Dr Reid, and is at variance with the wide-spread

Another accomplished naturalist, Professor Edward Forbes, who was resident in Edinburgh when Dr Reid lectured there, writes me thus:—"Latterly he gave much attention to zoological inquiries, and the course he pursued in them seems to me to mark well the peculiarities of his mind. He was essentially a fact-observer, and a phenomenon-sifter. His aim was the discovery of truth; and whatever appearance presented itself to him, he recorded faithfully and minutely, though never before he had fully satisfied himself that what he saw was not what he fancied he saw, but what he could by strict honest judgment believe to be. When he determined to observe an object, he determined to observe it in all directions in which it was capable of being minutely and thoroughly observed, as far as circumstances would admit. Consequently, all his natural history researches have a fixed and unchangeable value. They are isolated, and seldom worked with reference, so much to the development of the law, as to the determination of the phenomenon. They are possibly the more lasting, and the more to be depended upon on that account. Every one of his papers is a step onwards in the science; or rather a stepping-stone by which the onward-going philosopher may make a sure advance. Some of his inquiries (as that on the development of the Medusæ) were devoted to the re-observation of phenomena described by others. The result was more perfect, more sifting, and more scientific observation.

"Before I left Edinburgh I had learned to esteem him warmly as a friend. His truthfulness, warmth of heart, hatred of sham, and quiet sense of humour, were qualities eminently combined to win friendship and affection. For

reputation which his original and delightful works on natural history have procured for him, adds:—"A portion of one paper only (his first) was suppressed at my desire. It related to the hydra-like larva of the Medusæ, which Dr Reid had described as a new species of Actinia. I referred him to the works of Sars, etc.; and the result was his 'Observations on the Development of the Medusæ,' in the 'Annals' for January 1848."

fame, or rather what may better be called *éclat*, he cared nothing, and seemed to have no appetite. He was unchanging in his friendship; and when he had once taken a liking, was not easily driven out of it."

I close the account of this period with a quotation from a letter addressed to the late Mr James Tetley of Torquay, a young man of great promise, engaged in the study of medicine, and much esteemed by Dr Reid, whom he did not long survive. Other students of medicine, however, may profit by the sagacious estimate of the relative value of theoretical and practical knowledge in medicine, offered to one of the most hopeful youthful members of the profession, by one of its most experienced seniors.

"*St Andrews, October* 4, 1847.

"My dear Sir,—I was delighted to hear of your welfare; and that you had experienced so much satisfaction in your anatomical and botanical studies in Edinburgh last summer. By proceeding in the way you have begun, you will enjoy that inward satisfaction, which is better than gold and silver, of having employed the time and talents which your Creator has placed at your disposal, in a faithful and diligent acquisition of that knowledge, fitted for enabling you to occupy efficiently the highly responsible position in life you have selected for yourself. By carrying on your studies systematically and regularly, never deferring till to-morrow the acquisition of any portion of knowledge which may be as well done to-day, you will find your progress forwards easy and delightful. Endeavour, if possible, to join theoretical with practical information in proper proportion; for no man can be an efficient practitioner of medicine who attends exclusively to either, and who does not make them minister to each other. Among your fellow-students you will probably find some who devote all their time to the obtaining of practical information, while there are others who speak disparagingly of everything except it be of a speculative character. Avoid

the former, for you will find that they are narrow-minded persons who ought to have been artizans; avoid equally the latter, for they are dreamers, and totally unfitted for the every-day duties of their profession. Omit no opportunity of obtaining all kinds of professional practical information; use your eyes and hands freely in doing this when you possibly can; but at the same time study carefully the nature of the living organism, so that you may avoid becoming a mere machine in the discharge of your practical duties. . . . —Yours very sincerely,

"JOHN REID."

It will be judged from this letter, that Dr Reid was in the undimmed vigour of his clear intellect when it was written. He was in the prime of life, and in strong health; but a great change was near at hand.

CHAPTER VI.

ATTACK OF DISEASE IN THE TONGUE—RELIGIOUS CHANGE—SEVERE SUFFERINGS—ANTICIPATION OF DEATH.

> "Action is transitory—a step, a blow,
> The motion of a muscle—this way or that—
> 'Tis done, and in the after vacancy
> We wonder at ourselves like men betrayed:
> Suffering is permanent, obscure and dark,
> And shares the nature of infinity."
>
> WORDSWORTH.—*The Borderers.*

DR REID'S father died in the summer of 1846, leaving his son some property. His services as a medical man were in increasing demand, although he made little special endeavour to obtain patients, and altogether his worldly affairs were making successful progress. The reputation which his writings had secured for him, induced him, towards the close of 1847, to begin arrangements for reprinting them; and, with this pleasant work in hand, and projects of new research in prospect, he commenced the year 1848. He had come to look at St Andrews as his settled home for life, and many things contributed to make his lot a pleasant one.

Happily wedded, with young children growing up around him, an object of fond affection to a large circle of relations, and of the sincerest esteem to a larger circle of friends, greatly honoured by all who cultivated the sciences which he had extended; and what is rarer than all this, without, I believe, a single enemy or ill-wisher, he had in his possession most of the elements of earthly felicity. Time, too, seemed likely, for a long season, only to add to them. The branches

of knowledge which he most loved to study, were every day extending, and opening up fresh fields of research, in exploring which he could promise himself new delights and new honours. Higher academical preferment, bringing with it additional wealth, reputation, and opportunities for learning and distinction, awaited him, to all appearance, at no distant day; and even if promotion did not come, he had in present possession a sufficiency of worldly goods, a professional position, and such opportunities for cultivating knowledge as would have satisfied a much less contented and more ambitious man than he was. Above all, he possessed health, which in every estimate of human happiness, that does not make God its centre and source, must be placed at the summit of earthly desires. This good gift Dr Reid enjoyed in fullest measure. He had a robust body, great physical strength, a sanguine temperament, a vigorous intellect, a happy temper, and a resolute, courageous spirit. What might not one so endowed count upon achieving, in the twenty or thirty years of active life which apparently yet lay before him? It was in the midst of all this peace, prosperity, and happiness, that a mortal disease suddenly set its mark upon him. In the month of November 1847, a small blister appeared on his tongue, which before long opened into an ulcer, betraying the symptoms of cancer—a disease which, in spite of the advancement of medicine, is still almost synonymous with protracted, unappeasable torture, and painful, lingering death.

Some period elapsed before the true nature of the affection of the tongue was put beyond doubt. There can be no question, however, that from the first, Dr Reid looked with some anxiety on what so great a pathologist knew to be a suspicious malady, trifling though it might appear to an unprofessional eye. It is remembered by those who were about him at the time that, so early as December 1847, he frequently consulted the looking-glass to watch the progress of the complaint, and himself applied caustics to the diseased part. He was careful, nevertheless, not to betray his suspicions to any

of his relatives, although the ulceration visibly spread. At length, in the spring of 1848, it was so sensibly worse, that he proceeded to Edinburgh and consulted his medical friends. His appearance awakened graver apprehensions than they cared to think aloud, or almost to express to each other. But there was yet hope, and Dr Reid, provided with a gold shield to protect the tongue from the irritating contact of the teeth, returned to St Andrews, and submitted faithfully to the regimen and prescriptions recommended to him. They were of no avail in retarding the progress of the complaint, and as soon as the close of the winter session of 1847-48, relieved him from his more pressing university duties, he prepared to try new measures. The consideration of these brings me to the most momentous period of Dr Reid's history, so mournful in one respect, so cheering in another. In recording it I shall have to make more reference to surgical details than to some readers might seem desirable. These, however, shall not be enlarged upon further than is indispensable to bring out the character of him whose memoir I write. I wish to place before me the maxim which the great Greek, centuries ago, enforced upon the dramatists of his day, that "the office of tragedy is to purify by pity and terror." The precept is not the less valuable because Aristotle addressed it to the recorders of fictitious woes, instead of to one who depicts a tragedy, which so many have to lament was no fiction. I cannot, and would not if I could, avoid exciting pity and terror, but I would not willingly excite horror. If I unwittingly do, the reader may assure himself that there is no exaggeration, and the blessed end of all the woes I have to record, will atone for any uneasiness I may unintentionally occasion.

In May 1848, Dr Reid proceeded to Edinburgh, and had interviews with his former fellow-students and attached friends, Drs James Duncan and Simpson, who deliberated with anxious and affectionate care on his case. By their advice, in compliance with his own suggestion, he resolved

to try the effect of change of scene, and total silence for a week or two, and if these failed to be of service, to proceed to London and consult the surgeons there. Keswick in Cumberland was selected as the place of his retirement, and that he might as much as possible be spared the necessity of speaking, he went alone, leaving his wife and children behind him. He afterwards thought that he suffered in some respects more from the absence of these objects of affection than he gained by the enforced silence, and he was never again willingly separated from them.

The following letters, written from Keswick during the early part of May 1848, will, after what has been stated, explain themselves:—[1]

To Dr James Duncan. Undated.

"*Keswick, Saturday evening.*

"My dear Duncan,—I arrived here this afternoon, and have taken lodgings for a week. The country around this is very beautiful, and the weather is perfectly charming. I must confess, however, that I feel that my excursion is one of duty rather than one of pleasure, and I am not in sufficient spirits to enjoy it, as I have no doubt I would under other circumstances. I feel dull, and feel a strong desire to return again to St Andrews. I shall write you at the end of the week to tell you if I think there is any improvement. I often fear the worst, but if it should turn out so, I must submit quietly to my fate, as many a better man has done before me. There is, however, no use in taking this view, and anticipating evils." . . . .

To Dr Adamson. Undated.

"*Keswick, Wednesday evening.*

"My dear Adamson,—Here I am, located in the centre of the English lake district. I arrived last Saturday evening,

[1] The envelopes of the letters marked *undated* have been lost, so that the post-marks cannot be referred to, but I have endeavoured to arrange the quotations chronologically, following the guidance of internal evidence.

and have taken lodgings here in the meantime. The country all around this is very magnificent, and the weather has been charming. I walked one day to Buttermere and back again, being upwards of twenty miles for that day. I rode another day about fourteen miles, and walked about six. To-day I walked for an hour before breakfast, and between breakfast and dinner I rowed for four hours by myself upon the Derwent Lake. The boat was very small, and easily managed, and within the time mentioned I pulled the whole length of the lake (about three miles) and back again, besides crossing [from] one side to the other (above one mile), and visiting the different islands in it. The scenery here is really delightful, but I must confess that I would most willingly turn my steps homeward if I were permitted."

Some medical details are then mentioned in connection with the consultation on his case in Edinburgh before he went to Keswick, which did not lead to a very favourable opinion, and he continues:—

"You can readily understand that such a conversation as this was not the best preparation for a *pleasure* trip, and I must confess that I departed more from a sense of duty than from anything else, though both Simpson and Duncan said that they did not think it malignant.[1] Yet their excluding me from the consultation . . . . was sufficient to excite some suspicion in my mind that they were not quite sure of it.

"In travelling here, I often thought, why, if this be malignant, instead of spending money unnecessarily, which may be of great use to my wife and bairns, it were better I returned home, and 'put my house in order.' I cannot say that I observe much, if any, improvement in my tongue since I left."

Additional medical details follow, and the letter closes with

[1] This significant surgical term is used to denote certain ineradicable, fatal, and generally very painful diseases, such as cancer. Surgery is not behind the other practical arts in the metaphorical expressiveness of its terms.

one of those quiet bursts of subsardonic humour which were characteristic of the writer:—

"The various remedies proposed by my medical friends whom I happened to meet in Edinburgh (I consulted none but Duncan and Simpson) were very numerous, and not well calculated to give one a high notion of the *certainty* of the healing art. One or two kindly proposed to pull all my teeth on the affected side; others condemned potassa fusa, but recommended pyrolignic acid, nitric acid, etc.; others advised quinine and port wine, etc. etc."

To Dr James Duncan. Undated.

"*Keswick, Wednesday forenoon.*

"My dear Duncan,—I wrote you a few lines on my arrival here twelve days ago. I think my tongue is very much as it was when you saw it last. . . . I am sadly wearied of this kind of life, and I think I shall leave this on Monday. It is very discouraging to find that my tongue does not improve, and I often fear the worst."

To his Mother.

"*Keswick, May* 17, 1848.

"My dear Mother,—I regret to say that my tongue has improved very little since I came here, which makes me uneasy about it. I am weary of remaining here, and will probably leave at the end of the week. . . . I hope to have it in my power to visit you soon. If my malady improves, this will not be long. . . . I had almost forgot poor ——'s death, though this was one of the chief thoughts in my mind when I sat down to write you. Poor creature, she has left a world of misery and pain for, I sincerely hope, a happy one."

To Mrs Taylor. Undated.

"*Keswick, Monday afternoon.*

"My dear Mrs Taylor,— . . . . As I have been disappointed more than once in supposing that I was getting

better, I shall not say that there is any marked improvement; but I feel pretty certain that I am not worse, and I am more vigorous and stronger since I saw you last. . . . . I return to Carlisle to-morrow, and unless Dr Lonsdale is *quite decided* in saying that my tongue has improved since he saw it a fortnight ago, I shall take your advice and that of Mrs Reid in not delaying longer my journey to London, but will proceed there on Tuesday (to-morrow). I hope you are pleased with my *two bairns.*"

To his Mother.

"*Keswick, Monday morning.*

"My dear Mother,—I was much grieved to learn, by a letter just received, that you have been very ill; but it also contained the gratifying intelligence that you were now recovering. I most sincerely hope that you will soon be restored to your usual health, and that it is the Lord's will that you be yet spared for many days to come.

"I cannot say that I have improved much since I came here, though I have no doubt I am considerably stronger and more vigorous. I go to Carlisle to-morrow, and will either remain there with a friend[1] for eight days, or proceed at once to London. . . . I certainly am no worse since I left home, and would fain think that signs of amendment are presenting themselves; but recovery will, in all probability, be slow."

I have reserved for latest quotation two extracts from letters of different dates written from Keswick to his wife.

To Mrs Reid.

"In my lonely state to-day, I have been thinking a good deal more of religion than I have been in the habit of doing

[1] Dr Lonsdale formerly lecturer on anatomy in Edinburgh, now a medical practitioner in Carlisle. He was greatly esteemed by Dr Reid.

of late years, and a deep conviction, which I sincerely hope may be permanent, of the importance of religion and the unsatisfactory nature of all earthly honours and pleasures, has been ever present with me. I felt that the honours (scientific) which I have been so anxious to obtain, are but as dross compared with that enduring peace of mind arising from a full dependence upon God, and faith in his Son Jesus Christ."

* * * * * * * *

"As I mentioned before, my isolation here from my usual pursuits, and the quiet life I lead, has brought me to think more of what we shall be hereafter than I have been in the habit of doing. I sincerely hope that this may not be a fleeting impression, but that it may yield fruit meet for repentance. I am aware that the things of this world are still regarded by me far above their real value; but it may have pleased the Lord to send this dispensation upon me for my eternal benefit. If so, I may have great reason to be thankful for what has occurred, and my present vexation may be the cause of much rejoicing."

At the period when these letters were written, Dr Reid was in his thirty-ninth year. All at once, and quite unexpectedly, the curtain of the future had suddenly risen, and some few feet before him, in a path along which he must travel, yawned an open grave without any passage across it, and only the most doubtful chance of escape, by painfully skirting its perilous edge. He had been as near death, and even nearer, more than once before; and he had stood by many death-beds. Besides running in early life the gauntlet of inflammation (with the risk of cholera superadded), of fever, bleeding from the lungs, and the nearly fatal stroke of a mass which felled him to the ground, he had only a year before he went to Keswick very narrowly escaped with his life from a gig accident, in which Mrs Reid had also been put in great peril. Yet none of those events made more

than a transient impression upon him, or lessened the hold of his affections upon this world. Within a few weeks, however, of the first appearance of the malady in his tongue, a presentiment of approaching death had darkened every faculty and desire. I call it a presentiment, without seeking, meanwhile, to justify the term. It was partly, no doubt, only a logical inference from the physical symptoms of a disease, in relation to which he was at once surgeon and patient. But in its profound intensity it laid hold on something more than the mere logical faculty, and hid the whole soul within an atmosphere of solemn awe, to which the dread of suffering, or the animal fear of death, contributed very little. Against submitting to these, the stoical and courageous spirit of Dr Reid rose in instinctive defiance; but he surrendered his heart to a feeling which, with rapidly increasing distinctness he came to realise, as a message from God bidding him make ready to depart. The mere presentiment began to overshadow him in St Andrews, and deepened in gloom in Edinburgh, but it did not acquire the character of a religious emotion till he went to Cumberland; and he rarely referred to it till a later period. On his way to the Lakes, he spent a night in Edinburgh with his sister Mrs Taylor. He scarcely spoke a syllable; and his countenance wore such an expression of cheerless gloom, that his despondING, almost despairing look, haunted her through a long night which it rendered sleepless. It equally pained another near relative who, like Mrs Taylor, believed it to betoken an agonising mental struggle. When he returned from England this painful look was gone, nor did it ever return, although the probability of a fatal issue to his malady had much increased, and his physical sufferings were daily becoming more severe. The wan expression, which bodily exhaustion, and nights rendered sleepless by unquenchable agony, imprint upon the countenance, and the peculiar indescribable aspect which is occasioned by malignant disease, were afterwards seen too plainly on the sufferer's face. But the

despairing look which is begotten of the conflict between the heart crying "Peace? peace?" and the conscience replying "There is no peace!" was never witnessed on John Reid's noble countenance again. Keswick was the scene of a great spiritual change, in which so far as the mightiest objects that can interest mankind are concerned, all old things became for him new. It would be very satisfactory, merely as the solution of a curious psychological problem, much more from its value as a moral example, could we explicitly trace the steps by which he passed from the sceptical, critical domain of things visible, in which using the intellect as the only needful weapon, he had so long walked by sight, to that higher region of things invisible, in which he was hereafter to walk by faith. Had he long survived the transition, he would probably have dwelt upon the steps that led to it. But although there was a temporary recovery of health, he regarded himself all throughout (although he betrayed the feeling to few), as little else than a dying man. He was always thus in the condition of one preparing to die, and never far enough removed from the great crisis in his moral history which lay behind him, and the final struggle which lay before, to sit down and trace the development of his feelings at the period, when first in his life he could say, "the darkness is past, and the true light now shineth."

Moreover, he was not by nature given to brood over his emotions, or to watch with introverted eye the risings and fallings of the spiritual thermometer, on which many keep gazing till their moral vision becomes morbid and distorted. Neither was he prone to reveal what he did discover, when he looked into his heart; for, like other reserved men, he was most reserved on what most deeply stirred him. And, further, his self-sustained character, which did not crave sympathy, and his solicitous desire to spare the feelings of those most dear to him, made him conceal the extent of his sufferings and danger, and of necessity also the solemn feelings and spiritual conflict to which they gave rise. For

these reasons, there remains no detailed record of the struggle through which he passed, from the pen of the wrestler himself, and no one was with him to watch the agonisings which preceded the final victory. Yet enough remains, to leave little, if any, regret that we do not know more. The statements in the Keswick letters addressed to his medical friends, in reference to fearing the worst, returning to set his house in order, and almost deciding that the disease is incurable, are emphatic enough, so far as the anticipation of death is concerned. And the solemn references in the letters to his beloved mother and wife—expressive as they are of humble submission to God's will, contrition for sin, and reliance on the merits of Jesus Christ, as the only sufficient ground of peace—would doubtless have been still more unrestrained, had he not most anxiously guarded against betraying to those who had so deep and affectionate an interest in the matter, the fact of his being in all probability a dying man. The date of the struggle can be further authenticated. In a letter to Dr Duncan (which will afterwards be given in full), he writes on June 12, 1848, that for the last five weeks he has been preparing for a fatal issue, and seeking, he trusts not altogether unsuccessfully, to make his peace with God. To the Rev. Dr Cook he states on the 17th of June, that ever since he left St Andrews, he has been anticipating the worst, and preparing for the great change which to all appearance awaited him. His exact words will be given a little farther on. There can be no question, then, that it was during his lonely journeys among the hills and lakes of Cumberland, in May 1848, that he first tasted that peace, which thereafter abode with him to the last. The Keswick letters which have been quoted from, imply a gradual, though swift transition, from the chill source of consolation, that better men than he had met a fate as hard, to the Christian thanksgiving for God's mercy in leading him to Himself by the path of affliction. At first there is mere resignation to an evil which could not be escaped; at last there is rejoicing

at an unexpected joy which had been found. It is implied in saying this, that he came now to know God in a way he had never known him before. This was his own judgment on himself, not given once, but reiterated many times, as the sequel will show.

Before, however, his religious estimate of himself be given, that of others may be briefly referred to. In what immediately follows, I am guided chiefly by the opinions of three ladies, relatives, or connections of Dr Reid by marriage; by the judgment of two medical friends with whom he frequently debated on religious matters; and by the statement of a clergyman who knew him in early life, and saw him not long before his death. Their exact words will, in several cases, be given in the sequel.

Dr Reid spent his childhood in a religious circle, and underwent the careful moral training through which children pass in the pious Presbyterian families of Scotland. When he removed to Edinburgh he was for some time under the charge of the amiable clergyman, the Rev. Mr Learmonth, then a student of divinity, who has already been referred to. During the entire period of his student-life, he frequently visited his native village, and resided in it for some weeks every year, so that he never was long separated from the home circle, whose affections he so highly prized and so lovingly returned; and the gentle humanising influences of kindly female relatives were about him up to the period of his departure for Paris. His life was externally free from reproach in the eyes of his Edinburgh associates, nor was he tempted by the fascinations of the French capital, to assume a new character there. After his return to this country, there was added to the influence of his own relations, that of the members of the family into which he afterwards married, so that he was doubly guarded against evil. Nor was he by temperament, or self-indulgence, prone to give way readily to seductions. Frugality, simplicity of taste, and self-denial, he had early learned and practised, and his gravity, honesty, and affec-

tionateness of character, united to his zealous devotion to one branch of study, saved him from falling into the vices to which there are too many enticements in every large assemblage of young men. "He lived," says one of the ladies referred to, "soberly, and in many respects, righteously, for he was strictly truthful, just, kind to those in trouble, strikingly forbearing to the faults of others, industrious, unassuming, and gentle in his manners, and singularly free from all sins of the tongue; but it could not be said that his was a godly life, while all this had its origin in self-respect, or regard for the good opinion of society, not from obedience to the commands of God." The accomplished lady who wrote thus, greatly honoured and loved Dr Reid, and counted it a privilege to assist his affectionate wife in nursing him through his last illness, and to learn lessons of patience from the heroic sufferer. In her judgment my other informants concur. Dr Reid did not avoid the Bible because it condemned cherished sins which he would not abandon. His life, before his last illness, was, as he himself afterwards judged it to have been, only "a long array of sins and follies;" but it did not appear in this light to him when he was indulging in these. There was nothing so flagrant in his transgressions as to lower him in the estimation of his fellow-men, or heavily to burden his unawakened conscience. He closed the Scriptures rather because he had no relish for their contents, than because he was afraid of their condemnation, which he did not perceive already pressed with all its weight upon him. So, when he went to Paris, the thing which he thought could best be spared from his trunk was the Bible his mother had given him; and when he returned to Edinburgh it was left to gather dust behind the books which were prized and handled. The talk of a dissecting-room, in which at this time he spent the greater part of each day, when not confined to medical matters, is seldom very edifying, and often much the reverse; and the school of anatomy in which Dr Reid was demonstrator, was certainly not superior to others in this

respect. His daily duties, thus, were not of a kind to foster a religious spirit, and we have seen already that he confessed to his sister, that he was bent on scientific distinction, and had postponed to a more convenient season a return to his earlier habit of Bible reading. He certainly did not resume this on his transference to the Royal Infirmary, where he was occupied professionally alike as Pathologist and Superintendent, on Sundays as well as week-days. There are few places, indeed, where the temptations to a kind of Sabbath-breaking that readily admits of palliation, and excuses itself on the plea of necessary and merciful work, are so great as in an hospital; and none where even the well-disposed often find it more difficult to cultivate and maintain a devout spirit. Dr Reid's duties as superintendent were frequently of an annoying kind, and brought him into collision with those under his control; nor was the scanty leisure of the hospital-Sunday, which was not a Sabbath or day of rest, often devoted to non-secular work or study. Altogether, indeed, his Infirmary life was probably the least religious part of his career. It was more marked, however, than any previous part of his history, by a fondness for religious discussion, in which he took the sceptical side. Such discussions had to a lesser extent marked his student-life and earlier manhood. They were now constantly renewed in the rooms he occupied in the Infirmary, which formed the rendezvous of his medical friends.

In some of these debates he, perhaps, sought to gratify a dialectical rather than a sceptical spirit, and was chiefly bent on satisfying that love for discussion, and relish for intellectual gladiatorship which are congenial to clear logical intellects like his. But he certainly did not *pretend* disbelief, when he assailed as folly the expectation of an answer to prayer[1]—

[1] When once urged at this time by a religious medical friend to trust in the efficacy of prayer, he replied, "that before that could be proved, it should be ascertained by statistical inquiry (which it never had been), how many prayers received answers, and how many did not."

argued against the possibility of miracles—and questioned or denied the necessity and efficacy of the atonement for man's conversion—the need of the Holy Spirit's influence—and the reality of other religious beliefs At this period of his life he tried all problems by logic. Whatever would not give way before its cold steel, was not worth conquering by any other weapon. All truth must admit of direct demonstration to the intellect, or be denied to be truth at all. Such a condition of intellectual infidelity and dogmatism is no rare thing among thoughtful young men of irreproachable life and morals. The peculiarity in Dr Reid's case lay simply in the intensity of the sceptical spirit which he betrayed. He loved truth, and was willing to labour hard to attain it; but as yet he knew only one way of attaining it. If the great mystery of godliness could have been mastered by any process of analysis and induction, such as brings to light the hidden truths of physical science, few would have been more faithful, patient, painstaking, and persevering in the work than he. But when he found that all the triumphs which he had achieved in his favourite science, and all the skill which he had acquired in distinguishing truth from error in things cognisable by the intellect, but landed him at a portal, where the unlettered pilgrim is as welcome as the lettered, and ranks on an equal footing with him as a proselyte of the gate; when he saw that Bacon, of whom he was so admiring and successful a disciple, could not carry him beyond the threshold, and that the only gateway by which the region of spiritual truth is reached, is guarded by a porch through which none can enter erect but a little child; he turned away with a kind of wondering uneasy defiance. There must be a stately doorway through which the philosopher, wielding the weapons of his victorious analysis, and lifting on high his "*Novum Organon*," might enter otherwise than the little child did! If there were not, he must remain outside *in partibus infidelium*, for he *would not* and *could not* (in such a case how strictly interchangeable the terms are), bend

beneath the humble porch. In this spirit it was not difficult for one gifted as he was, to entrench himself behind formidable defences, when pressed by friends who urged him to make religion a matter of more serious consideration than he had yet done. That his own conscience was satisfied by his ability to resist being convinced, is not at all probable. To make one's peace of mind and hope of salvation turn upon the issue of a dialectic chess-fight, which, when most successful, is only a drawn battle, is to play a losing game. This he felt, and his aim was rather to keep the unwelcome Christian assailant at bay, than to act on the offensive against him. The only occurrence that provoked him to exhibit anything like scorn for religion, was the spectacle of cant, hypocrisy, or open immorality on the part of those who made an ostentatious profession of peculiar piety. But he was too honest and impartial to confound a system of truth with its treacherous betrayers; and those whom he knew to be earnest, faithful, and enlightened in their religious belief, he honoured and revered. A scoffer he never was. He acknowledged God as the creator and ruler of the world, and loved to refer to the evidences of design displayed in the structures of animals. But it was as the All-powerful Master of the universe that he looked up to Him, with something, perhaps, of the feeling (if, with reverence, I may use the comparison) with which an ancient feudal baron regarded his emperor or suzerain. His sovereignty he did not disown, and he did not refuse allegiance to Him, but into His presence he came as rarely as possible, and never without a feeling of discomfort, if not of dread, lest he should be called to account for his regulation of a princedom, which he practically managed, as if it had been altogether his own. God as our Father in heaven, Christ as our Mediator and example, the Holy Spirit as our enlightener and sanctifier, were not as yet in all his thoughts. "When I knew Dr Reid," says the friend whose estimate of his intellectual merits has already been given,[1] "it never

[1] See page 47.

struck me that he was a religious man. I do not think that he had then learned the great truth, that *faith* as well as *sight* is part of man's nature."

During the latter part of his residence in Edinburgh, and the earlier part of his sojourn in St Andrews, he took a good deal of interest in the religious conflict which at the time divided the Established Church of Scotland. But it was the ecclesiastical rather than the theological aspect of the questions in dispute which interested him, and he cast in his lot with neither of the contending parties. When he was appointed professor, he joined the Established Church, of which he had not previously been a member, and in it he remained to his death. He was exemplary in his attendance on the ministrations of the Rev. Dr Cook, and was chosen one of the elders of his church. When he became the head of a household, he had family prayers daily, but he went through them formally, and was glad apparently when something occurred to prevent them. Sunday was decorously kept, but it was an irksome day, and he did not hesitate to read scientific books, or to use his microscope, when he could do either without creating scandal, or vexing those he loved, whose feelings, even when he counted them weaknesses or prejudices, he would not willingly offend.

I should be sorry to undervalue the sincerity of his religious profession at this time, or to seem indifferent to the influence in deepening his most profound convictions, which was exerted upon him by regular attendance on public worship, the maintenance of family prayer, the society of a pious wife, intercourse with devout relatives and friends, the loss of his first-born which sorely afflicted his affectionate heart, the death of his father, and other events. And I am solicitous to guard against making his later religious earnestness appear more prominent by depreciating that of his earlier years. But there is no room for doubt. He himself would reproach me from his place of bliss were I to represent him as at this time a Christian. Those who loved him most and knew him

best, mourned that he was not one, and he felt it himself. Years before, at the death of his devout brother-in-law, Mr Taylor, he said, "If the Bible is true, there can be no doubt he is happy enough;" but as yet the "if" was only in part resolved. "I passed," said he on another occasion, referring to his condition before his last illness, "with others for a moral man, but God was not in all my thoughts."

It was with this verdict given against him in the forum of his own conscience, that he retired to Cumberland, to listen daily in his dumb agony to the prophetic voice sounding in his ear—"Prepare to meet thy God!" He repeated the warning, however, to no one; took no relative, or connection, or religious friend, into his confidence; applied to no earthly quarter for assistance; furnished himself with no theological treatises, or polemical works, or, so far as I know, with books of any kind to accompany him in his journey. For a brief space he appears to have been too much staggered to think whence help could come. But in his travelling trunk his wife had been careful to place a Bible, and one of his earliest letters to her was full of gratitude for the thoughtful kindness. This Bible was his daily companion in his lonely walks. He studied it with an intensity such as he had never displayed in the study of any book before. He studied it as a book which only those who have the guidance of the Holy Spirit, who inspired it, can understand; and he was earnest in prayer to God for the gift of his Spirit. Nor did He who loveth to be entreated, forget His promise to give the Holy Spirit to them that ask Him. Within some three weeks at farthest, a peace, composure, contentment, and joy, which John Reid had never known in the most healthful and prosperous season of his past life, pervaded his soul, and his heart began to fill with "the perfect love that casteth out fear." It was the old and wonderous, but true tale. For years he had been doubting the wisdom of prayer, holding it to be presumptuous for an individual to look for special favour from God,—arguing concerning the irreconcilability of free will

and predestination, the dilemma of liberty and necessity, and the like theological problems. He had built round his soul outworks of doubt which he could not unbuild, nor any other man take down for him; but at one breath of God's Spirit they fled away, and no place was found for them. He came to God fully realising for the first time that "He is, and that He is a rewarder of those that diligently seek Him;" and God filled him with good things, and sent him not empty away. There was not explained to him how to the Ruler of the universe, prayer does not clash with foreknowledge; and he knew no better than he did before how the Creator's infinite omnipresence co-exists with man's finite individuality; what the bond is which reconciles predestination and free will, or what the link which resolves necessity into liberty. He does not, probably, even now know how to reconcile these mysterious opposites; perhaps he never will, nor any other child of man. But he was made certain that God hears prayer, for his own prayers were answered. He was assured of forgiveness for his sins, for "the peace of God which passeth all understanding" was with him; and the speculative difficulties which had once seemed to hedge him round and hide God's face from him, fled away at the sound of prayer to that shadow-land which skirts the horizon of this life, and kept silence whilst he found answer to the great practical question, "How shall man be just before God?"

There is something to myself unspeakably touching and solemn in the spectacle of the forlorn man of science—an exile among the lonely hills and still lakes, gazing on their beauty with a mournful distraction, and as yet finding in them no emblem or foreshadow of those green pastures and quiet waters which are now for ever his. A dark season there doubtless was, deepening onwards into midnight gloom, illuminated only by infernal lights, and echoing with demon voices reiterating blasphemies, and hoarsely whispering, "Curse God and die." And then there was the morning twilight, and the slow dawning from below the troubled

horizon, and the gray shadows, till the day star arose in his heart, and not only was it bright within, but all the outer world was coloured with "a light that never shone on sea or land."

Only by metaphor can we dimly sketch, in the case of another, the steps of that great change in which a man becomes a new creature before God, and a new being in his own experience. But the fruits of the change can be described without any simile. In John Reid's case, the change was unaccompanied by any of those distortions of natural character which sometimes attend religious conversions. The world is fond of saying that such distortions are never wanting from earnest, pious spirits, and excuses itself from being converted because it can point to some weak brother whose stock of common sense is not overflowing, or his intellect very capacious. Good Mr A. holds that mesmerism is of the devil; and good Mrs B. thinks that the administration of chloroform is a practical denial of the fall of Adam, and a sinful endeavour to escape the penalty that was laid on all the mothers who descend from Eve; and because they think so, religion is folly. Alas! the follies of our neighbours will avail us as little as their worth in the great day of account. Yet it need not be denied that a strange severance is made by some, in truth by many, perhaps by most, between their religious and their secular life. The God whom they worship in private as "Our Father, which art in heaven," in public is referred to as "the Deity;" and Sir Isaac Newton is quoted as leading the way in recommending scientific men to substitute even for that heathen term the chilling impersonality of "nature." [1]

[1] It was the temper of Sir Isaac's audience, not his own, that prompted this; but there is falsity somewhere when such modes of speech are current. There are not two Gods—a God of grace and a God of nature—one for the Sunday and another for the week-day—one for the hour of prayer and another for the hour of business or pleasure. We know that in our hearts we serve but one Master, and we mock ourselves when we say that it is reverence for God's holy name that makes us substitute for it a

Some devout people, who are not without the power of laughing, would have you believe that they never so much as smile. Poetry, music, painting, art, literature, and science, except in their lowest, meanest, and most material aspects, are spoken of shyly and disavowed, even by those who relish their highest achievements.

On all hands, to lead a Christian life through the twelve or more waking hours of a week-day, out of a pulpit, an oratory, a study, or a nunnery, seems a problem which few can solve. At rare intervals, a Boyle, an Arnold, a Chalmers, and some kindred genial spirits, are sent to teach us that there is no lawful calling which may not have all its requirements fulfilled in a Christian spirit. Had John Reid lived longer, he would have illustrated this. He did it, so far as was permitted by the brief span of days allotted to him, after his conversion. It produced no distortion in his character. There was nothing noble in it by nature, which was lost by the change; there was nothing noble, that was not purified and sanctified by it. His honesty, integrity, charity towards others; his affectionateness, filial reverence, patience, and courage, not only remained, but deepened and widened in their flow. His caution, prudence, discretion, business-punctuality, interest in books, relish for anatomical and physiological investigations, sympathy with the progress of science, strong common sense, keen logical faculty, and general intellectual tastes, survived in all their integrity. The difference appeared mainly in the relative amount of time which he now devoted to religious things, as compared with secular, and to the spirit in which he engaged in both. Only the first fruits of this change could appear at Cumberland. It was not until some weeks later that he made an open profession of his new views.

shadowy abstraction, or an official title. Even in the Bridgewater Treatises, whose office is to glorify God, He is referred to by any and every title rather than that which should be nearest a Christian's heart—"Our heavenly Father."

Meanwhile his bodily ailment underwent no improvement. At intervals he visited Carlisle to obtain the opinion of his attached friend and fellow-anatomist Dr Lonsdale; but as he was constrained in faithfulness to acknowledge that there was no amendment, Dr Reid fulfilled his intention of going to London and consulting the surgeons there.

The following letter, written from Edinburgh after his return from London, to Dr Adamson of St Andrews, will explain the result of the consultation. I give the letter entire, as it strikingly illustrates the calmness and self-possession with which Dr Reid prosecuted his secular affairs, in spite of the dark prospect before him. His "Anatomical, Physiological, and Pathological Researches," was going through the press, and led to the requests for books which fill so large a part of the letter. They bring out prominently the bibliomaniac element in his character.

"*Edinburgh, Monday.*

"My dear Adamson,—I returned to this from London on Saturday last. On my arrival in London, I went to talk over matters with my old friend William Fergusson; and of course he examined my tongue and gave me his opinion about it. Next morning Syme and Sir B. Brodie met in consultation about it. They were very reserved in their communications to me; 'hoped that it would get better;' and were not prepared to say that it would not turn out malignant, at the same time such ulcers do quite well occasionally. They hoped that it was an ulcer from disordered stomach. They were both of the same opinion I expressed to you in my last, viz., if it be non-malignant it will get well, if it be malignant an operation would be of no use. Fergusson, again, is more of an operating man; and he told me that he thought it would get well, . . . but if it got worse, he would advise me to have an operation performed. Sir B. Brodie prescribed *some very simple* medicines for me; advised me to avoid all stimulating or escharotic applica-

tions; go to some quiet place; avoid St Andrews for a time; and see what this would do for me. So you perceive the prospect before me is not a cheering one. Suppose it to be malignant, if it do not proceed at a more rapid rate than it has lately, I shall have some time to prepare myself for leaving this world; for Syme thinks it no worse than it was three months ago.

"Mrs Reid and I set off to-morrow for Innerleithen (a watering-place near Peebles), where we intend to take lodgings for some time. I shall take plenty of exercise in the open air, take a drink of the mineral water, and endeavour to swallow the sarsaparilla and lime-water Sir Benjamin has prescribed for me.

"I am going to tax your patience and good nature, by requesting more favours at your hands. Would you look out a few books for me, out of my library, which I require to complete my notes to the papers which I am reprinting? In the middle book-case opposite the window, and in the lowest shelf, where the Library of Medicine and Encyclopædia of Anatomy and Physiology are, *there is a volume* made up of several *treatises*, among which is *Valentin* De Functionibus Nervorum Cerebralium, etc. This volume I want. In the same *book-case*, but in the *press* below it, there are lying the *numbers* of a German periodical, entitled Wagner's Handwörterbuch der Physiologie, not yet finished, and not yet bound. Of these I want the following: the one containing Muskelbewegung, by *Weber;* the one containing Nervenphysiologie, by *Volkmann*, and the *two last* numbers. *Volkmann* sent me a separate copy of his article Nervenphysiologie, which generally lies on the top of the books in the lowest shelf of the middle *book-case* where Valentin is to be found. It is in yellow paper boards; and if you can find it readily, you need not send the number or numbers of the Handwörterbuch containing this article. I want Müller's Archiv. (they were lying under my table when I left), after 1840. There is a volume for each year. This work is half-bound, and

belongs to the University Library. I also want Solly's work on the Brain (2d edition), and my German Dictionary. On my table, near the window, among a mass of pamphlets, etc., you will find a thin quarto in blue paper boards, ... in German. Will you also have the kindness to look at the specimen of the fish (a Deal fish) sent shortly before I left, that it is sufficiently supplied with fluid to cover it? It is at Bell Street.

"The annual subscriptions to the Sydenham Society should have been paid about this time. Will you have the goodness to collect the money from Dr Smith and Mr M'Bean, and send it? If you will oblige me by paying mine, I shall give it when I return to St Andrews. If you will tell Mr M'Bean that the subscriptions to the *Ray Society* should be sent at this time also. Will you advance another guinea for me in this matter? Really I am taxing your goodness and patience to an enormous extent; but I hope that under the circumstances you will excuse me.

"I shall write you on my arrival at Innerleithen, how to send my package of books. Mrs Reid has just told me that she has written for one of our servants to come here, and that she will leave on Thursday first, and she can bring the *books*.

"Believe me, my dear Adamson, very faithfully yours,

"JOHN REID."

At the same time he wrote to his mother, explaining that the injunctions laid on him not to speak more than he could help, compelled him reluctantly to refrain from visiting her; and that he hoped by and by to have it in his power to inform her that he had begun to improve. The letter concludes thus:—

"I sincerely hope that my present affliction will be for my spiritual advantage. It has brought me to think over the folly of placing our affections and happiness upon the fleeting and uncertain things of time, which at any moment may be snatched from our grasp."

On June 2, he wrote from Innerleithen to Dr Adamson, acknowledging the receipt of the books he had requested. One passage in the letter is worth quoting, as containing the expression of a hope of recovery, which to his medical friends was never repeated:—

"The weather has been unfavourable since I came here; but I feel more cheerful and comfortable than of late, having my wife and bairns beside me.

"I think, but I may be mistaken, that my tongue is looking better within the last few days; at all events, I cannot see any appearance of its getting worse. There is, however, so much hardness about it, that taking the most favourable view of its nature, it must take a considerable time to heal. That, however, would be a small evil, compared with the other alternative."

On the same day he wrote to a sister:—

"I have been here too short a time to know whether it is to be of benefit to me. I feel so much more cheerful and comfortable with my wife and bairns than alone, that I have a better chance of getting well, having them here, than if I were living by myself. The cheerful prattle of Alice, and the ever-ready smile of my good-natured boy delight and amuse me. Mrs Reid arranges everything for my comfort, without my requiring to talk. The state of isolation, and the removal from my usual pursuits, which my illness has occasioned, have led me to think how strongly my affections are fixed upon the fleeting and perishing things of this world; and how little prepared I am for resigning it, and giving an account of my stewardship. Whatever may be the result of this malady under which I now labour, I sincerely hope and trust that it will be the means of ultimate and great gain to me.

"I hope my mother continues better. Give my kindest regards to her; and tell her that if I cannot say I am better, I can at least say that I think myself no worse."

The transient gleam of improvement, which at first attended his removal to Innerleithen, proved deceptive; and there remained apparently no other method of treatment which promised an extension of life, but the painful and uncertain one of submitting to the removal of the diseased portion of the tongue by surgical operation, with in all probability a termination to his acting as a public teacher, even if his life were prolonged. The prospect of the suffering which such an operation would occasion, did not weigh with Dr Reid one moment, in making him hesitate to submit to it; but the statistics of surgery pointed almost decisively against any permanent gain resulting from the interference of the surgeon in such cases; and most medical men of experience were of opinion, that any temporary alleviation of symptoms which might result from the excision of the cancer, would be neutralised in the end, by the aggravation of suffering certain to attend its return. Yet, it might not return; and even if it did, the sufferer "had given hostages to fortune," and for their sakes would be thankful for a brief lengthening of his days, though it should but add to his last physical agonies. On this point he wrote as follows to Dr Duncan, on whose skill as a surgeon, and devoted affection as a friend, he knew that he could equally rely. The italics are his own.

"*Innerleithen, June* 12, 1848.

"My dear Duncan,—I have been here for nearly a fortnight without the slightest improvement of the tongue; on the other hand I believe that the hardness is slowly and gradually extending. That it is malignant I think there can now be no doubt. I have been endeavouring to prepare my mind for the last five weeks for this view of the case, and I hope not altogether unsuccessfully. It is hard to think of leaving wife and bairns and many kind friends, but I must bow submissively to the chastening rod. Had it been the will of my Almighty Father I would gladly have lived a few years for the sake of my family, as it would have been

considerably for their advantage; but if He has decided otherwise, it is my duty patiently to submit.

"From what Syme said, I believe that Sir B. Brodie and he would not recommend any operation. I believe that this would not prevent it running on to a fatal termination; for although all the parts apparently diseased may be removed, it would in all probability return. But I wish to know if it be probable that the operation would prolong my life for *a few months*, as this, for reasons I can explain afterwards, would be of advantage to my family. If Syme be returned to Edinburgh, you will, perhaps, take the trouble to consult with him on this matter. If you think it [more] likely that my life might be prolonged a few months longer by having an operation performed than by allowing the disease to run its course, *it is my wish* that it should be done; if you have strong doubts on this point, we shall let it alone. I ought to mention to you that one of the glands of the neck of the affected side is somewhat enlarged. If you should be favourable to the plan of an operation, I would come in to Edinburgh the beginning of next week."

To Dr Adamson he writes on June 13:—

"When I came here [Innerleithen] my tongue presented some symptoms of amendment, but these proved deceptive; and my opinion is that it is considerably worse than when I left St Andrews. In fact I have a strong conviction that my earthly career will soon come to a close, and that I will never lecture nor attend a patient again. A short time more will, however, put aside all doubts on this point. I have been disciplining my mind to take the worst view of my case ever since I left St Andrews, and my thoughts have naturally turned to the only source capable of yielding consolation under such circumstances. However much one is apt to neglect these matters when in health, we see their paramount importance when this earthly scene begins to fade from the view. I shall probably remain here a short time longer to

give the present plan of treatment a fair trial, and then return to St Andrews. My time does not hang heavy on my hands. The company of my wife and bairns is a great comfort; and I walk a good deal about, play with the children, write notes for my book, correct the press, etc., etc.; so that I am on the whole cheerful and contented. . . ."

Reference is made in the preceding letters to long walks. In these, as in Cumberland, he was alone—at least he was unaccompanied by his wife or family—that the regimen of silence might as far as possible be maintained. But his former companion, the small Bible, was never forgotten; and with it in his hand he spent hours among the picturesque hills that border the beautiful Leithen.[1] At this period, also, his endeavour to spare Mrs Reid the knowledge of his exact condition and danger was in great measure incidentally defeated, so that he could open his heart freely as to the origin of the profound interest, which all about him observed, he was now taking in the Scriptures. From this time forward, accordingly, he was much less restrained in his avowal of religious belief than he had been before.

To the Rev. Dr Cook of St Andrews he writes on June 17:—

"*Innerleithen, June* 17, 1848.

"My dear Sir,—Many thanks for your kind letter, and also for the *certificate* of *communion* sent by you to Mrs Reid. I feel deeply grateful, in fact it moves me sometimes to tears, when I learn the affectionate sympathy expressed by so many of my friends for my welfare. I know not how to express my acknowledgments of so much kindness.

"I thought that for the first few days after coming here there were some symptoms of amendment in my malady, but they proved deceptive, and there can be no doubt that I am

[1] It was remarked by the children's nurse, a faithful old servant, that "the Doctor had a sair wark wi' his Bible, such as he never had before."

gaining no ground in that respect. Indeed I have no great hopes of ever being again well—at least I think it is right to take this view of my illness, and to prepare my mind for the worst. Whatever be the result, I sincerely hope that I shall have great reason for rejoicing that I have thus been afflicted; for it has led me to think of the careless and unprofitable life I have been leading, and how unfit I am to give a satisfactory account of my stewardship, if called upon so to do. I have, ever since I left St Andrews, been frequently and seriously thinking over these subjects, and endeavouring to school my mind to consider this chastening as sent for my advantage, and that I ought to bear it cheerfully and resignedly. I have frequently prayed to my Heavenly Father to send down the Holy Spirit into my heart, to strengthen and confirm these good resolutions. I am, however, aware that all efforts of mine to obtain forgiveness for my sins are vain, unless I throw myself freely upon the mediation and intercession of my Redeemer; and it is through His merits, and His alone, that I venture to ask for forgiveness.

"I find that my time passes pleasantly enough here. I walk about a good deal, play occasionally with the children (this, however, is less satisfactorily done than I would wish from not being able to talk), read a little, correct proof sheets, etc. If in the course of a fortnight or so, I find that I am not improving, I shall return to St Andrews, when I shall have the pleasure of seeing you. Whether or not I enter the lists against you at golf remains to be seen."

On the 22d he addresses a similar letter to a sister at Bathgate, announcing his purpose of visiting his relations there, and in Edinburgh, on his way back to St Andrews. He warns them that he cannot talk a great deal, and refers to his preparation for the early death which he anticipates; but lest he should pain them too much by alluding to this, he is careful to explain that his general health has improved, and that "the time passes pleasantly enough."

The last letter from Innerleithen was written on 26th June to Dr Duncan. He acknowledges receipt of a "very kind letter," refers to the severe pain which he is now beginning to feel in the seat of the disease, and adds in a postscript:— "You must not suppose that I have been fretting myself, and been impatient because my tongue is not healing, for I am sure Mrs Reid will testify that I am generally cheerful and contented."

Soon after writing this letter he came to Edinburgh, but the majority of his medical friends there dissuaded him from submitting to an operation as not likely to be of any service; and after a short residence with his mother, he retired in the beginning of July to St Andrews, prepared to set his house in order and make ready to die. From this time forward to the close of August, every day added to his sufferings, till at length patient and courageous though he was, he was compelled to have recourse daily to opium or chloroform to alleviate his agonies. Sleep and abatement of pain, however, are purchased at a heavy cost, when obtained only by the use of narcotics and anæsthetics. We are apt to think, even though we have been ill ourselves, of one attacked by a topical malady, as if, except that he has one disease, he were as we are; forgetting that what counts but as one disease in the doctor's calendar, counts as many in the experience of the patient, and that if "one member suffer, all the members suffer with it." In Dr Reid's case, besides the direct suffering which attended the unstayed progress of a cruel disease, slowly eating into an organ largely supplied with sensitive nerves, there were the added pangs which waited upon painful articulation and mastication, with the menacing prospect of death by suffocation, or starvation, or unquenchable bleeding, if his iron frame were not worn down by the nervous exhaustion attendant on protracted torture. Moreover, loss of appetite, of strength, spirit, energy, intellectual activity and capacity, more or less follows even the temperate daily use of narcotics, and the weary sufferer often knows not

which to dread as more insupportable, the acute agony which only an opiate will stifle, or the dreary misery which sets in when its action is spent. Through these alternations Dr Reid daily passed. He was freest from pain in the earlier part of the evening, when he obtained temporary relief from a cigar, but he had often to sit up till morning unable to sleep, and enduring great agony, which opiates very partially deadened. At daybreak he retired to bed, only to awake, after a few hours of troubled slumber, prostrate and unrefreshed, to begin again the weary round. Yet he bore up with unflinching courage, claimed no indulgences, and devoted all the intervals of comparative ease to study and business. The statement, on this point, of one of the ladies who was in his family at this period, is to this effect,—"His sufferings were terrible, but borne without a murmur. He made very little complaint, never uttered a groan,[1] made light of his anguish, tried to give as little trouble as possible, was patient, submissive, and contented, and very grateful for any kindness shown him." Another lady remarked,—"Of his patience you cannot say too much." These statements must be kept in remembrance in reading his letters, the tone of which might seem to imply no great amount of bodily affliction on the part of their writer.

As yet few of his friends were aware of the great religious change which had passed upon him, and many anxieties were expressed by those who knew the hopelessly incurable nature of his disease in reference to his preparation to meet death. Even those, however, out of his family circle, who knew him best, when they called to remembrance his former indifference to spiritual concerns, hesitated to break the ice, or to intrude upon the reserve of one whose inner thoughts it was at all times difficult to fathom. It was from himself, accordingly, that, with one exception, the confession of his faith spontaneously came, and this adds to its value. There was

[1] This is not to be considered as an exaggeration, or at least is one only thus far, that a lady who was with him at the worst, could only tax her memory with having *once* heard him give utterance to a groan.

one however, the Rev. Samuel Martin of Bathgate, whose strong sense of duty impelled him to visit Dr Reid solely to confer with him upon the state of his soul. The following is his account of the interview. It will not be read with the less interest, that its writer did not long survive him for whose spiritual welfare he was so solicitous.[1]

The letter was sent in reply to one of mine, requesting information concerning Dr Reid's religious character, and containing some questions which are incidentally answered by Mr Martin.

"*Bathgate, October* 12, 1849.

"DEAR SIR,— . . . . . .

Dr Reid had entered on his medical studies when I was settled here, so that I only saw him occasionally during the vacation of college, and then, from his family being Dissenters, more seldom than might otherwise have been the case. Still, by degrees, we became intimate; there was much, I need not say to you, very amiable and attractive about him. Manly, modest, and kind he was, though a stranger might perhaps have set him down as a little cold and shy. But there was a decided deficiency in regard to that which every wise and Christian man must esteem the one thing needful for a poor sinner. He was in nothing, that I am aware of, an open offender. He was, as to religious things, decorous, never, that I heard of, spoke of them or at them in a slighting way, was a church-goer, and outwardly a Sabbath-keeper; yet it was but too manifest that all this proceeded from no personal conviction and feeling, but from the early training and other influences which in so many produce towards religion and its services a civil, or it may be, reverent

[1] The Rev. Mr Martin was originally minister of the Established Church, afterwards of the Free Church, in Bathgate. He was a man of superior gifts, much loved and honoured in his parish, and respected by men of all parties. At the period when he visited Dr Reid, he was labouring under disease of the heart, and in many respects a great invalid.

bearing, in which the heart is not. I don't know that his studies and investigations of the material had blunted his sensibilities in regard to the immaterial; but in the latter, so far at least as affected by the Christian revelation, he had no real interest. It was my clear perception of this that made me, when I heard of his dangerous state, go to St Andrews for the express purpose of endeavouring to ascertain his spiritual state, and of dealing with him, if need were, more faithfully than I was too conscious I had ever done before. This was in summer 1848. I was shown into his study, he being out at the time. Nearest his arm-chair lay on his table the Bible; next to it lay a volume of Dr Chalmers' Scripture Readings. There was a number of medical works on the table; but the works uppermost and nearest were all more or less of a religious character. Surely, I said to myself, there is a great and blessed change here, and the hope was most abundantly confirmed when I conversed with himself. I regret that my verbal memory is very poor, and that I cannot pretend to give you the language of a single sentence uttered by him; indeed, I have but an imperfect recollection now of the substance of our conversation. It began by my telling him that I knew too well that his state had been such as I have endeavoured to describe, and asking him if it was so still. He acknowledged with sorrow that I spoke too correctly, but said, with thanksgiving to Him whose grace had changed him, that it was no longer so. His sickness and danger were the instrument which God had used to bring him to another mind. . . . .

"We prosecuted the matter together for a considerable time. Indeed, it was I that broke off the conversation. He used the slate with his wife and sister; but he got so earnest with me, that I could not get him to use it; and as every word was uttered with much suffering, I could not continue it after I was fully satisfied that he really had undergone that great change, without which no man shall enter into the kingdom of heaven. He brought out gradually the general

course of thought and feeling through which he had been led till he had arrived at a quiet, peaceful resting on the Saviour's grace. There was nothing very singular in it. One might, perhaps, rather say, that the wonder was, that to a thoughtful, well-instructed man, the whole had not occurred long before. So, however, would not he speak who knows the native spiritual blindness of the human mind.

"I had no subsequent opportunity of entering at any length on similar topics. I saw him but twice afterwards. Once I little more than saw him; and on the other occasion there were too many people present to admit of confidential communication. I was summoned home by the death of one of my children at the very time I was going from Dundee to see him this summer, and I never had another opportunity. But no doubt was left on my mind that he had been 'chosen in the furnace,' and that the Lord was preparing him for the song of those 'who have come out of great tribulation.' And every one can tell you that his whole demeanour through his agonising illness was in fullest accordance with such a view of his character, while it proclaimed the precious truth, 'Thou wilt keep him in perfect peace, whose mind is stayed on thee.'

. . . . . .

"I am, dear Sir, yours truly,

"SAMUEL MARTIN."

The interview detailed in this letter occurred in the beginning or middle of July. Throughout the month he wrote to different friends, explaining his condition, and referring to his religious change. His deepening conviction of a fatal issue, and increasing preparedness for death, will appear from the following extracts from his correspondence.

To Mrs Taylor.

"*St Andrews, July* 14, 1848.

"MY DEAR MRS TAYLOR,— . . . With regard to myself, I see no sign of the least improvement; on the other

hand, the disease is slowly and gradually making progress, and *almost* arrived at that stage when hopes of recovery may be abandoned.

"I am endeavouring to discipline my mind to this view of my case, and I trust in my God not without some success. I know that until lately I have lived a careless and unprofitable life, and that were I to trust in the slightest to any of my own works or deeds, I must fall under the severest wrath of God. I also know that though I had lived as pure a life as it is possible for a mortal and erring man to do, I would have come infinitely short of the requirements of the law of God, and that nothing but a full reliance upon the merits and mediation of my Saviour and Redeemer can save me from that punishment which my sins deserve. I have been endeavouring, through earnest and frequent prayer to God, to solicit, in a proper spirit, the Divine blessing upon my efforts heavenwards,—entreating that He may send the Holy Spirit to comfort and instruct me, and that Christ may act as my Mediator and Redeemer.

"Though it is a hard and trying thought to leave wife, bairns, relations, and kind friends, and the various temporal blessings with which my Creator has surrounded me; yet I have great reason to thank God that he has not cut me off suddenly in the midst of my carelessness and indifference to the things that concern my eternal peace, but has given me full warning that my time here is, in all probability, short; and has, above all, enabled me to take advantage of that warning. It is my duty to bow submissively to the chastening rod, knowing that our Heavenly Father afflicts us that it may conduce to our eternal welfare. If we could only bear fully in mind that there is a happier and eternal state of existence awaiting us, if we will only accept of it, after we leave this world of sin and misery, where friends may meet to part no more, we would feel little reluctance to quit it."

To Dr Carpenter.

"*St Andrews, July* 15, 1848.

"I have lately returned to St Andrews, after an absence of more than two months in search of health; but instead of being better, there is every probability that my career on earth is drawing to a close. About eight months ago, an ulcer formed on my tongue, to which, for two or three months after its appearance, I paid but little attention. In the beginning of February last I went to Edinburgh, and consulted some of my surgical friends there regarding it; but they appeared to consider it one of those ulcers that depend upon deranged stomach, as my stomach was very much out of order at the time of its appearance. I took various remedies at the suggestion of Dr Duncan and Mr Syme, and it appeared to remain for some time stationary, and even showed some symptoms of amendment. At the close of the winter session, in the beginning of May, I left this to wander about the lakes of Cumberland. Finding this doing me no good, I went up to London for a single day, to consult Sir B. Brodie and Mr Syme, and when I also saw my old friend Fergusson. Since then I have passed a month at a retired watering place in the south of Scotland; and about a fortnight ago returned home, under the impression that within a short time I shall be called upon to give an account of the deeds done in the body.

"I have been for the last three months disciplining my mind for taking an eternal farewell of earthly things, and endeavouring to make my peace with my Heavenly Father. I have to bless and praise my Maker that He has not cut me off suddenly in the midst of my carelessness and indifference about religion, but has given me timely warning that my sojourn on earth is, probably, drawing to a close, and has enabled me to take advantage of that warning. It is no doubt a hard and trying thought to leave for ever—no, I hope not for ever, for I praise God there is another state of existence where we may again meet—still it is very hard to make up

my mind to leave wife, children, kind relations, and the pursuits in which I have taken so much delight; still it is my duty to bow with submission and resignation to the chastening rod, knowing that it is for my eternal welfare that I have thus been afflicted. My worldly circumstances were assuming a more comfortable aspect; my constitution, until lately, was robust; my age still in its prime (within some months of forty years); I had formed plans for carrying on investigations into the structure and vital actions of the lower organised bodies which can be so readily procured from this coast, little thinking that disease was so soon to overtake me. I had my dreams of being able to add something of importance to the deeply attractive and instructive matters embraced in such investigations, and I was looking forward to the time when I should be able to say that I have done something which will prevent me from being readily forgotten. You may say that these were indeed *dreams;* but I believe most people build castles in the air. . . . If my disease should present any symptoms of amendment, you shall hear from me again." [1]

To Dr Henderson.

"*St Andrews, July* 19, 1848.

"My dear Henderson,— . . . I have been suffering for several months from an ulcer on the tongue, which has assumed many of the symptoms of malignancy, and will, in all probability, soon bring my earthly career to a close. I have been endeavouring for the last three months to discipline my mind to take this view of my case, and have been seeking consolation and support under this dispensation in the quarter where they are alone to be found.

"It is my duty to bow with submission to the chastening rod, knowing that it is laid upon me for my growth in grace. I am fully convinced that I can do nothing of myself to merit pardon for my numerous offences, and my only hope

[1] Brit. and For. Med. Rev., Oct. 1849, pp. 578, 579.

of forgiveness is through the mediation of my Saviour and Redeemer."

To Mrs Blair.

"*St Andrews, July* 19, 1848.

"My dear Mrs Blair,—Many, many thanks to you for your very kind note of yesterday. The sympathy exhibited towards me in my present affliction by all my friends has been most gratifying, and far beyond what I had any right to expect. When I think of all the kind wishes and acts manifested towards me by my friends, it often brings tears into my eyes, and quite unmans me. . . . With regard to my own malady I have nothing favourable to say. It is gradually and slowly extending, and, according to all human probability, will soon bring my earthly career to a close. I have myself been prepared for this for the last three months, and have been disciplining my mind to take this view of my case. I have been endeavouring to make my peace with God, and I am glad to say that I can look upon my exit to the dark and narrow house with comparative calmness and composure. There are many things from which I find it hard to part, but I must learn to bow with submission to the chastening rod. I do not absolutely give up hope of recovery, but, according to all human probability, there is none, and it is right to take the latter view of the case."

To Dr Henderson.

"*St Andrews, July* 24, 1848.

"My dear Henderson,—Many thanks for your very acceptable letter.

"I feel that I have great reason to say, 'it was good for me that I was afflicted.' I have much cause to thank my Heavenly Father that He has not cut me off suddenly, but has sent upon me a disease which has given due intimation that my earthly career will soon close, and allowed me time

to repent of my sins and turn unto God. I shudder to think of the consequences had I been called *suddenly* to give an account of my stewardship while living a life of carelessness and indifference to the commands of my Heavenly Father, and daily crucifying my Saviour afresh and putting him to open shame.

"I now see the soul-defiling and soul-destroying nature of sin in a light which I never saw it in before; I deplore with deep contrition of soul my past offences; I perceive the utter insufficiency of any act of mine to deserve the mercy of God: I feel that I am eternally lost unless the Holy Spirit descends into my heart to direct and guide me to that refuge secured for poor perishing sinners through the merits and sufferings of our Savour. I have, therefore, prayed earnestly that the Holy Spirit may direct and guide me, that my sins and transgressions may be washed out in the blood of the Lamb, that my Saviour may be my mediator and intercessor with the Father, and that *He* may support and comfort me as I walk through the dark valley and shadow of death.

"When I wrote you last, I was very languid and feeble. My stomach was much deranged, my appetite was gone, and I was daily losing flesh and strength.

"Since then, I have pulled up wonderfully; I am able again to take a good deal of exercise in the open air; my appetite is good, and I have gained decidedly in flesh. I have been taking cod-liver oil for the last twelve days, and whether it deserves the credit of having effected this, I cannot say. I perceive, however, no change to the better in my *malady*. I wish you would send, *immediately*, the corrected copy of your paper, for my *work* has arrived at that stage of the printing, that if your paper is to be included, it must be sent to the printer *very* soon."

To Dr Carpenter.

"*St Andrews, July* 24, 1848.

". . . Your belief that we physiologists will, in a future state of happiness, have the veil raised from those

mysteries of organised bodies into which we cannot at present penetrate, and that those things which we 'now see through a glass darkly,' will be revealed to us in all their beauty, is one which is well calculated to yield me comfort and consolation at present. And I sincerely pray that God in his providence may bring us both in due time into his heavenly kingdom, and that we, in company may gaze upon those wonders and mysteries in His works here below into which our feeble intellectual powers cannot *now* penetrate, but which *then* will be fully revealed.

"When I last wrote you I was in a very feeble state—both mentally and bodily. I had scarcely eaten anything for eight days, and my strength was rapidly giving way; so that I thought it possible I might not have it in my power to write to you again. Since that time my strength has rallied wonderfully. I am again able to take a good deal of exercise in the open air; my appetite is excellent; I am evidently gaining flesh; and I am now fit for some mental labour. This does not, however, inspire me with any hopes of *recovery;* for the disease remains, as yet, as bad as ever, and I have at times a good deal of pain in that side of the face.

"I often sincerely regret that my mind was not earlier impressed deeply with the paramount importance of a religious life. It strikes me *now* with the utmost surprise that man should continue to fix his affections entirely upon the fleeting and perishing things of earth, and that he should turn a deaf ear to the kind entreaties, the warnings, and the commands of his Heavenly Father, who made him, has supported him, bestowed upon him all that he possesses, and who will one day exact a rigorous account of the things done in the body, unless he turn and repent him of his sins. What a lamentable proof this is of the debasing nature of sin, and of the soul-destroying bondage under which it has placed man. I find that there is a satisfaction, a deep-felt and soul-satisfying pleasure in a religious life, which the pleasures of sin

cannot afford; so that, apart altogether from the life that is to come, it would be much for man's advantage to lead a life of righteousness."[1]

To Mr James Tetley.

"*St Andrews, July* 27, 1848.

"My dear Tetley,—Many thanks for your kind letter inquiring after my health. I cannot give you any favourable accounts on that point, for my malady seems to be slowly but gradually gaining ground. I have for some time past been disciplining my mind to view my earthly career as approaching its close, and have been seeking consolation and comfort where they are alone to be found. I know that I can of myself do nothing to deserve the mercy of God, and my sole trust is in the merits and mediation of that Saviour who offered up himself a sacrifice, that sinful man through him might escape the just vengeance of God.

"I was delighted to learn that you had carried off so many honours this summer session, and I most sincerely hope that your life may long be spared, and that you will be an honour to that profession which you have selected. Continue to pursue your studies with a single eye towards discovering the truth, and with your excellent talents you cannot fail to distinguish yourself. This need not interfere with a due attention to your duties towards God. I now deeply regret that I allowed so little time to the obtaining of that saving knowledge which is so infinitely superior to all earthly wisdom, that it is not in words to express the difference in their value.

"Give my kindest regards to your father when you see him, and tell him that I have again lately read the "Memoirs of Howell,"[2] which he had the kindness to present to me, with much satisfaction, and, I also hope, not without profit.

[1] Brit. and For. Med. Rev., Oct. 1849, p. 579.

[2] The reference here is to "Perfect Peace, Letters Memorial of the late John Warren Howell, Esq., of Bath, M.R.C.S., by the Rev. David Pitcairn."

With the warmest wishes for your welfare and your happiness in this life, and that you may enjoy 'perfect peace' when your turn comes to leave this earthly scene.—Believe me, my dear Tetley, your sincere friend,

"JOHN REID."

The only portion of this correspondence to which I would make a brief reference is that in which Dr Reid responds to Dr Carpenter's hope, that in a future state of happiness, revelations shall be made to us of the beauties and mysteries of living beings. I cannot but express my intense sympathy with this expectation. Religious men of science are too slow to indulge, or at least to confess such hopes. Nor do I blame them. A dread of seeming to think lightly of that spotless holiness, which is the essential element of heaven, has made good men reluctant to acknowledge, even perhaps to encourage, anticipations which seem to point rather to the gratification of intellectual than moral desires. And perhaps, also, they have been unwilling to dilate on points on which their unlettered brethren could not sympathise with them. Yet this would only account for the concealment, not for the repression of such feelings, which even in the confidential intercourse of scientific men are much more rarely expressed than might be expected. Among the things which "eye hath not seen nor ear heard," and which are promised to those that love God, will be nothing that is not his workmanship; and the sanctified intellect of a redeemed spirit will not need to fear, or to risk the stain of sin, when in all its acquisitions of knowledge it is guided by its Redeemer, by whom all things were created that are in heaven, or that are in earth; who is before all things, and by whom all things consist. We cannot imagine that eternity is to be spent only in receiving knowledge by direct revelation, or doubt that we shall be largely taught God's character and will by the spectacle of His works. The favoured few whose lot permits them to make some small progress in studying these

here, should surely rejoice that intellectually they have begun studies which need never end. It was a true and beautiful remark of William Allan the Quaker-chemist's wise and gentle mother, when seeking to win from him more attention to religion, and less devotion to the fascinations of his favourite science, she reminded him that Christ cast even the *doves* out of the temple. The most innocent and lawful of earthly objects of interest may not occupy that central place in our affections which our Saviour claims for himself; but in the souls of the redeemed all other desires will, without painful effort, arrange themselves at due distances from this centre. To the spirits of the just made perfect, the path of duty will be identical with the path of holiness, and the same thing as the path of happiness. The intellect and the heart no longer at war with each other, will act harmoniously together, and recognise all God's attributes in all His works.

Neither need the poor and the unlearned of this world who are rich in faith grudge the student his hopes. The shortest lesson in heaven will teach more than the longest on earth. A day in the upper sanctuary will bring up the lee-way of a lifetime; nor will the slowest scholar complain of want of time, when he has all eternity given him to spend in learning the deep things of God.

"It is better," says the quaint Sir Thomas Browne, teaching what he did not practise, "to sit down in a modest ignorance, and rest contented with the natural blessing of our own reasons, than buy the uncertain knowledge of this life with sweat and vexation, which death gives every fool gratis, and is an accessary of our glorification."[1]

The 1st of August 1848 was looked forward to by Dr Reid as the last occasion on which he should discharge any public college duties. The examination of the candidates for the degree of Doctor of Medicine occurred on that day, and on him, as the only medical professor of the university, the

[1] Religio Medici, Second Part, viii.

chief burden fell. A temporary vacancy existed at that time in the chemical examinership, and at Dr Reid's request I undertook the duties of the office. I had thus occasion to spend the day in his company in the Examination Hall; but we scarcely exchanged words. It gave him so much pain to speak, that all were anxious to spare him the necessity of uttering a syllable, and after exchanging greetings, I retired to a distant part of the Hall, and purposely kept out of his way. I was, however, a greater stranger to him than any of the other examiners, and he seemed to think that on that account he owed me more courtesy. Unable to show it by words, he came over by and by to the table where I was sitting, and motioned to me to share with him a bunch of grapes, one or two of which he occasionally sucked to relieve the pain in his mouth. I took a few, looking on the gift as one of those little kindly acts which were characteristic of the giver, who feared he might be regarded as uncourteous, and his silence misinterpreted, and who, I did not doubt, also looked upon me as less likely than my robuster fellow-examiners to remain unfatigued during a protracted examination.

No one who saw him at this time would have judged from his look that he suffered so severely as he did. His share in the examination was discharged by means of a written paper of questions, on the answers returned to which he gave a very brief report in writing. The other examinations were oral. His whole demeanour was grave, composed, and calm, and his intellectual faculties were as vigorous as ever. I parted from him in the evening expecting never to see him again, and looking forward with painful sympathy to the increased suffering through which he must pass before he could be released by death. But death was farther off than all, himself included, then imagined.

The month of August was spent like that of July, only with every agony aggravated, and his strength began visibly to give way. Twice Dr Duncan and Mr Goodsir proceeded to St Andrews with the purpose of performing an operation,

should it seem advisable; but both times they came away, thinking it better not to interfere. On one of these occasions he referred pointedly to the seat of his sufferings being the same nerves on which he had made so many experiments, and added, "This is a judgment on me for the sufferings which I inflicted on animals!"[1]

To this he recurred at a later period, referring to it, however, not as an avenging retributive judgment, but as a kind and merciful one. This, however, will be considered again.

He was thus left to his fate, and with a composure as great as if he had been giving an opinion on another's case, he discussed with the medical friends already mentioned in what way he was likely to die, whether by starvation, resulting from the increase of the disease rendering swallowing impossible, or by the cancer eating open a blood-vessel and occasioning fatal hæmorrhage.

But on these matters he dwelt, after all, but little. It was the moral rather than the physical aspect of death on which he fixed his thoughts, and he was more anxious to be prepared for what should follow than for what should precede death. It acquired no new terrors, considered as a spiritual change, as it apparently drew nearer. He did not write many letters during August, but they are in the same strain as those already given. Here is a passage from a letter addressed to his mother on the 18th of the month, which may serve as an example of his feelings throughout it: "There are many things in my present condition to make life desirable. I occupy an honourable position in society, I am blessed in a kind and affectionate wife and beloved children, and I have many and sincerely attached friends, but I

[1] I cannot give the exact words (the term "judgment" excepted), which have escaped my memory as well as Professor Goodsir's, from whom I had the statement at the time when it was made, but the members of Dr Reid's family, who heard him more than once make a similar statement, confirm their general accuracy.

can truly say that I do not repine or murmur at the dealings of God with me, but bow with submission and resignation to his chastening hand, praying that the Holy Spirit may direct and guide me, and trusting in the merits and mediation of my Saviour, and in these alone, for salvation." The following notes, given me by a sister-in-law, who was an inmate of his house at that time, will bring us nearly to the close of the month.

"*August* 1848.—On Sunday the 6th he suffered much, and was restless and unsettled from pain. In reply to an expression of sympathy and sorrow, that he should have so much to bear, he said, 'As far as it has gone I do not regret it, for it has done me much good,' adding that he now saw how foolish it is to expect or require such proofs in regard to the work of redemption as are necessary in science.

"*Wednesday*, 23*d*.—He spoke with approbation of 'Reade's Meditations,' of which one had just been read. On its being remarked that all the assertions made in it were supported by Scripture, and that it did not introduce mere speculations, he rejoined, 'Oh, I do not want speculations.' He then spoke of 'Butler's Analogy' as a book from which he had at all times derived much benefit, as it removed doubts which from time to time had troubled him, adding with energy, 'forgetting that a poor worm of the dust has nothing to do with calling in question whatever God has appointed.'

"*Saturday*, 26*th*.—He mentioned that his morning reading had been two of Jeremy Taylor's Sermons on Death-bed Repentance, and that he spoke discouragingly of it. Some conversation followed on the reasonableness of not depending on the repentance so often expressed in sickness, as he had often seen those who in sickness made determinations to lead a different life if restored to health, soon return to a godless one. He assented to the distinction to be made between a mere dread of punishment, so often mistaken for

sorrow for sin, and a hatred of the sin as contrary to God's will, and displeasing to him."

Such was his condition; his sufferings and his faith increasing together, when he was suddenly snatched from the grave, released for a season from his bodily affliction, and an indefinite prospect of lengthened happy days rose in rainbow-colours before him.

CHAPTER VII.

FIRST SURGICAL OPERATION—TEMPORARY RECOVERY—SECOND AND THIRD OPERATIONS—LAST ILLNESS AND DEATH.

> "O my brother-men Heroic,
> Workers with the hand and brain,
> 'Tis the Christian, not the Stoic,
> That best triumphs over pain."
>
> *Reverberations, a Poem.*

The judgment of the majority of Dr Reid's medical friends had been so decidedly against the wisdom of any surgical interference, that it had seemed almost settled that the malady should be left to take its course. Professor Fergusson, however, when consulted in London, had thought an operation advisable, if the disease should prove incurable; and Professor John Hughes Bennett of Edinburgh, who had paid great attention to the disease under which Dr Reid laboured, was unceasing in urging on all the parties concerned, the strong probability of a beneficial result accruing from the removal of the diseased portion of the tongue. In his friendly zeal he urged this upon Mr Fergusson, who, though less sanguine of an ultimate cure, declared his willingness to operate, since it afforded the only chance of saving his friend's life. Dr Reid was still more willing than at an earlier period to submit to any surgical severity; and his sufferings were now so extreme, that no medical friend felt at liberty to oppose further a step, which promised at least a great temporary alleviation of agony, even if it did not avert a fatal issue. The patient was a surgeon, entitled to choose for himself between the opinions of his professional brethren, and ready to take all the responsibility upon him-

self. It was accordingly resolved, that advantage should be taken of Mr Fergusson's visit to Scotland in the end of August, and Dr Reid came to Edinburgh on the 29th of the month to place himself in his hands. The old companions, now surgeon and patient, had an unlooked for and sad encounter. "They met accidentally in the street, and Mr Fergusson was greatly shocked at the alteration for the worse in Dr Reid's appearance; his gait was tottering, and his nerves so shaken, that on recognising Mr Fergusson he burst into tears. His friend put the best face he could on the matter, but to say the truth, was sorely inclined to follow his example." [1] Dr Reid spent one evening at Sir William Newbigging's, but his sufferings were too great to permit him to profit by the society of his friends; and after obtaining their advice on his case, and receiving their affectionate condolences, he removed to his sister Mrs Taylor's house, and abode there during the day (the 30th of August), preceding that on which the operation was performed. It was for the most part a silent and painful, yet not a sad interview. He retired to bed pretty early, but tortured with pain and unable to sleep, he asked Mrs Taylor to read to him "something—anything she pleased." She chose an article in the Christian Treasury, referring to the lives of religious medical men. The names of the parties referred to were not given, but he gave them as he recognised the persons described. When the reading of this paper was finished, he begged that a chapter of the Bible, and thereafter a prayer, might be read. Mrs Taylor observed that she had little faith in read prayers; to which her brother replied, "neither have I;" but the prayer as well as the chapter was read, and at the conclusion he quietly composed himself to such broken slumbers as the agony of the night, and the prospect of the morrow, would permit.

[1] Medical Times, March 1851, p. 266.

Next morning he rose rather early, breakfasted heartily, and then looked among his sister's books, till he lighted on Baxter's Saint's Rest, which he read, walking about the room, till Mr Goodsir came to accompany him to Dr Simpson's house, where the operation was to be performed. He was quite calm; to a degree, indeed, that led him to express to his sister his surprise at his calmness. He felt, he said, as composed as if he were about to suffer nothing. Besides the kind-hearted host who had put his house at the service of his afflicted friend, and Mr Fergusson, on whom the chief burden and responsibility of the painful duty about to be discharged lay, Mr Goodsir, as already implied, and Dr James Duncan, were present to help, and Dr Bennett was also in attendance. I name these friends, because there is a striking and touching lesson in all the accessaries of the painful scene, which may be missed by many. Out of medical circles, surgical operations are only referred to with a brief shuddering sympathy, unless where a morbid appetite for the horrible leads to an unwise familiarity with their occurrence and details. I do not hasten over this one, because it had features about it which deserve and compel notice; and no morbid appetite will be pandered to, or any sympathy outraged by pointing out what these are. It is only on rare occasions that the sacredness of private life can be set aside, and public reference made to what occurs within its hallowed circle; but I violate no privacy here, and the necessity which lies upon all who do not unworthily evade their duty, to become familiar with scenes of suffering, may be learned at this scene, if it has not been learned before.

There were unusual elements of pity in Dr Reid's case. The physician was for the time the patient; the curious investigator of morbid structure had come to be a striking example of disease; the public speaker was struck inarticulate and dumb; and it was a surgeon who was under the knife of the surgeons. Here, surely, was a mournful combination of

ingredients of humiliation and sorrow. But this was by no means all. The surgeons were the attached friends of the patient. They did not gather round him, with cold professional eye, to discharge an official duty. Fellow-lecturers, fellow-students, or fellow-scholars, and old playmates they all were, and now they were assembled to perform, with grieved hearts, a cruel and painful task. For doctors so circumstanced there is no sympathy in the unprofessional public heart. The surgeon who can lift his knife upon his friend, is looked upon as little better than an assassin in spirit. Men glow over the tale of the Roman Brutus condemning his sons to execution; and women weep at the spectacle of Virginius stabbing his daughter to save her honour; but no one compassionates the surgeon who nerves his heart to inflict suffering upon one he dearly loves, or reveres the moral courage which guides his unfaltering hand. Yet among the medical men who were with Dr Reid on that painful day, were hearts as tender, affectionate, and gentle, as we need wish, or may hope to find among our active brethren. Sorely reluctant had they been to undertake the unwelcome duty to which they were now called. There was little prospect of increased professional credit to themselves from the task, and there was much immediate responsibility and distress. Only the conviction that there was no other way of serving him whom they loved so deeply, gave them courage to go on; and no one understood this better than he who was the object of all this sympathy. On his side there was corresponding courage, and he showed entire submission to their guidance. The operation he had to undergo was not one which admitted of alleviation of its pains by the administration of anæsthetics. It required not merely endurance, but firmness and active fortitude; and the *patient* was expected to be something more than that negative term implies. Nor was the expectation disappointed. His face wore even a smile, as before putting himself in Mr Fergusson's hands he recognised an old school-fellow among the non-medical

attendants, and saluted him with a sobriquet of the play-ground. Throughout the operation he rendered every assistance, by deliberate acts implying rare heroism; and the surgeons who were about him still speak of his resolution and courage. Apart from its power to abolish pain, chloroform is often given, simply to secure passive stillness and entire helplessness on the part of the patient; here it was purposely withheld, that the sufferer, with every sensation and faculty alive, might assist, and literally become an operator upon himself. At length the painful work was safely completed, though not without great loss of blood, which in such cases cannot be avoided, and the patient was transferred to bed, where his faithful friends, Dr Simpson, Dr Duncan, and Mr Goodsir, with a great burden lifted from their hearts, took turns in watching by his bedside, lest hæmorrhage should happen, or any other untoward symptoms appear. The relief which followed the operation was almost immediate, and the good news spread through Edinburgh, and by and by through the country, giving delight everywhere. In truth, it must be stated in vindication of a calling whose humanity is often and foolishly denied, that throughout Dr Reid's illness, he was an object of the deepest sympathy to all his professional brethren in the island, and especially to those in Edinburgh and London. He, who in his earlier days had been called by his pupils and fellow-students, "Honest John Reid," was now spoken of kindly and sadly as "Poor Reid;" and all were thankful to learn that the critical operation was past, and that he was doing well; nor did anything material occur to delay his immediate recovery. A friend who visited him the morning after the operation, was welcomed with a smiling countenance. He was lying calmly in bed, with a large pasteboard card in his hand, on which some verses of the Bible were printed in large letters, so as to be seen with little effort by the prostrate invalid. Here is the first of them: "He that spared not His own Son, but delivered Him up for us all, how shall He not with Him also freely give us all

things?"—Romans viii. 32.[1] Speech was, of course, impossible to him, but he expressed on a slate his freedom from discomfort. Compared with the agony which he had been enduring without murmur, or almost confession of its severity for months, the sting of the wound was too trifling to fret so brave a spirit, or ruffle the serenity of a heart at peace with God and man. Refreshing sleep and keen appetite followed on the cessation of suffering, and the abandonment of opiates. Strength rapidly returned, and within a fortnight of the operation, Dr Reid was on foot, and out of doors. I met him about this time, one morning, walking on Bruntsfield Links, close to which he resided with his mother-in-law, Mrs Blyth. He hastened to meet me, to save me climbing a slight acclivity between us, and welcomed me with a grave, quiet smile. He looked ruddy and vigorous, and the power of articulate speech was much greater than I had at all expected to find it. I had but a brief conversation with him, and it mainly consisted on my part of an expression of sympathy, as having myself been in the hands of the surgeons, with his recent experiences as a patient. With great energy, struggling for words, he replied, that he was amply recom-

[1] The card referred to had been sent to Dr Simpson's house by his friend and neighbour, James Cunningham, Esq., who happened to call, and hearing of the painful scene which had taken place there, sent the set of printed texts to the sufferer. Mr Cunningham had himself known what it is to be so prostrated by illness, that continuous reading, or listening to reading, is unwelcome, and indeed impossible. At the same time he had found the comfort of having a single notable passage from the Scriptures presented to the mind at due intervals, as something, not so much to be studied, as simply accepted and realised as a ground of peace and hope. After recovering his own health, accordingly, he had a series of Scripture passages printed in large letters, and offered them for the use of such invalids as came within his notice. I mention this because the point is worth the attention of the Religious Tract Society, or other similar societies, which might do a great service by printing such sets of tracts, and scattering them through the hospitals, workhouses, and sick-rooms of the country. To be able and desirous to recall passages of Scripture is often the condition of the invalid, whom suffering or weakness renders unable to turn over the leaves of a book, but who can handle a card, and without shifting his position, read capital or large letters upon it.

pensed by the relief from pain which the operation had secured to him, and such was his language to every medical friend to the last. There was a composure and gentleness about his manner which strongly impressed me; but before we parted he had abated not a little my joy at seeing him so well, by telling me that he was about to have another operation performed.

About this period he paid a visit to his old friend Dr David Skae, who resides in the neighbourhood. They walked together, speaking of many things, in the beautiful grounds of the Morningside Asylum, of which Dr Skae is resident physician. He stood in a closer relation to Dr Reid in some respects than many of his other friends did. He was one of the very few with whom Dr Reid conferred on religious matters; and Dr Skae's earnest enforcement of the truth and worth of the doctrines of the Bible, had led to many a stubborn debate between the friends in the old Infirmary days. In the course of their conversation, as is customary on occasions when men feel deeply, they talked at first of things which lay far off from what was nearest their hearts; but at length, sitting down on a bench which commands the magnificent view of the Braid Hills and the Pentlands, they began to exchange confidences in earnest. Dr Reid referred to the operation as a thing for which he was grateful, inasmuch as it relieved him from the agonies which he had endured before; and emphatically added, that he would willingly submit to the operation again, for as much relief as it had already procured him. He proceeded to say, that though he had not mentioned this to any relative or connection, he was not sanguine as to the final result of the operation. The chance of recovery, as compared with that of the cancer returning, he thought was as one to a hundred. From the expression of such an anticipation of what the future had in store for him, the transition was natural to a confession of the feelings with which he contemplated that doubtful and ominous future. With an affectionate anxiety to convince his friend that

his views concerning God were all changed, and with a noble and touching simplicity, he referred again and again to his trust in his Saviour as the only and the all-sufficient helper and Redeemer; and then he went on to add, repeating the statement more than once, that it might seem foolish, but he could not divest his mind of the feeling that there was a special Providence in the way in which he had been afflicted. He had devoted peculiar attention to the functions of certain nerves, and had inflicted suffering on many dumb creatures, that he might discover the office of those nerves; and he could not but regard the cancer which had preyed upon them, in his own body, as a heaven-sent, significant message from God, whom otherwise he might utterly have forgotten. I cannot give his words, but I faithfully report his belief as reported to me by Dr Skae.

There is no religious doctrine, probably, more frequently scoffed and sneered at than that of a special Providence. Yet there is none less open to general denial, simply because it should never be submitted to general criticism. Religious persons are in the wrong, when they insist upon others, whether religious or not, agreeing with them in considering some particular event in their experience as a special Providence. It is impossible that a thing can at the same time be specific and generic. A special providence would cease to be special if it became general. The witness of God's Spirit with any individual spirit, is to it a testimony that needs no confirmation, but it is a testimony *directly* to no other spirit.[1]

[1] The dealings of God's providence with men have come to be strangely talked about. One may read any day in a newspaper, such statements as that two persons being exposed to some peril, the one was *accidentally* killed, whilst the other was *providentially* saved; as if there were a rival of God, called accident, which presided over the deaths of men; and there was not often as true, and merciful, and conspicuous a providence, in taking men away "from the evil to come," and sending them to be "with Christ, which is far better," as in lengthening their days in a world full of sorrows.

The instinctive realisation of this kept Dr Reid, naturally so reserved, from being communicative to any but intimate friends as to his conviction of the mercy which had been shown him; and it was only medical men who could appreciate the conviction he entertained. Yet there is no thoughtful member of his profession who will not be struck by the particulars of his disease. It might seem, at first, as if so profound an anatomist and learned a pathologist could not possibly die of a disease with which he was not already familiar as it ran its course in others; and that, as he must, like his fellow-men, die of some distemper, his last illness and death could not but have some relation to the pursuits of his life. Yet conceding all this, who would have ventured to foretel—and who is not startled by learning—that Dr Reid is doomed to die by a disease which repeats upon his own body, not in one but in many ways, the pains and the perils which he had imposed upon the lower animals? It certainly was remarkable; and many of his medical brethren felt it to be so. [1]

We shall see this further illustrated in the sequel. Only medical men, however, can judge of the extent to which there was a coincidence between the nature of Dr Reid's malady and that of his researches, and I leave the question to their decision.

It much more concerns me, as biographer, and all my readers, whether medical men or not, to have it put on record, that to John Reid it was matter of most solemn, sacred belief that of all the maladies which might have been sent to agonise and slay him, one was chosen, in God's merciful providence, which came home to his heart as fraught with a more significant and special lesson than most others

[1] Dr Bennett pointedly remarks of Dr Reid, "that he suffered the most excruciating agony from the ulcer affecting those very nerves, the functions of which his own labours had so greatly tended to elucidate;" and in another place he adds, that "Perhaps there were few men better able to judge of the danger and necessarily painful character of a malignant disease in the throat, involving such important nerves."—Monthly Journal of Medical Science, April 1850.

could have done. He said extremely little about this belief to his friends. I am not aware that he mentioned it to more than three. Those who were ignorant of anatomy could only have been startled or horrified by an allusion to it; and to none did he profess to justify the truth of his conviction. He almost apologised for giving utterance to it, as was most natural; for how shall one *demonstrate* to another that the Holy Spirit has communed with his spirit, or that a special manifestation of God's favour has been made to him? To speak of it is almost to destroy its sacredness: to try to prove it to others is to mistake its nature; and by transferring it from the region of spiritual consciousness to that of the argumentative intellect, to treat it as if it were a revelation from God intended for all men, instead of a special message only to one. Dr Reid received it solely as the last, and in the same spirit acted upon it. It gave a new colouring to all his past life and favourite studies: it changed entirely the aspect of the future, and deepened the patience with which all its sufferings were endured. There can be no question that when he wrote, as he did, to so many friends, that he bowed thankfully and submissively to the "chastening rod," —the unvaried and, apparently, general language which he used, stood in his own mind for a most specific recognition of peculiar mercy and judgment displayed towards him in the shape which his illness assumed. Yet there was nothing mystical or fanatical in his religious earnestness. The liberty with which Christ makes his people free was conspicuous in him to the last; and his confession and realisation of Christianity were as untinctured with obscurity, hesitation, or confusion, as his scientific observations and descriptions had been. The full proof of this belongs to the history of a later period; but I have not much anticipated in referring to it.

The wound inflicted by the surgeons had not healed, before dark omens of returning disease began to show themselves,— not in its original seat, but in the glands of the neck. Dr Reid, in consequence, after paying a short visit to Bathgate,

and spending a night with his brother, Dr Henry Reid, in Manchester, proceeded to London, where he hoped to induce Mr Fergusson to perform another operation. In a letter to Dr Adamson, he explains the nature and perils of the operation, with his customary anatomical precision and coolness. The following extract from the letter will illustrate his deliberate composure, without paining the unprofessional reader. I put four words in italics:—

"When you are down at the College you would much oblige me by looking into the big wooden box, to see [whether] the materials for the anatomical course, used by you last winter, be in want of spirits or not, *as whatever should happen* there is no use in allowing them to be destroyed for want of a little spirits. Will you, also, look at the fish in my house?"

This letter was written about the first of October, and a day or two after Dr Reid, accompanied by Mrs Reid, proceeded to London. There was a prospect, which was in small part realised, of palliative measures sufficing for the removal of the untoward symptoms, and he spent rather more than a fortnight in London and the neighbourhood, awaiting Mr Fergusson's final decision. This detention and suspense were not a little irksome, but they did not overtask his patience. To his mother he writes on the 9th,—

"It would afford my wife and me, the utmost delight to be able soon to return home, as the expense of living here is great, and we are both wearying much to see our children and take up our abode in our quiet home. You would be pleased to see how strong I have got since I left Bathgate. I can walk four or five miles without feeling fatigued. I am free of pain, and eat and sleep well. I have not been so strong for a long time, and I feel grateful to the bountiful Bestower of all things for the blessings it has pleased Him to grant me."

In the end Mr Fergusson declined to perform an operation, and Dr Reid, who had "unbounded confidence" in his skilful friend, prepared to return home without consulting any other surgeon. To Dr Adamson he had already written,— "If Fergusson hesitates, you may be sure most people would be afraid to interfere."

He was amazingly active in London, and made various excursions to the more attractive places in the neighbourhood. Four days were spent at Putney with his old friend Dr Cormack, and the following cheerful picture (one of the last we shall see), of his proceedings there, will refresh the reader's eye for a moment before the clouds return again:—

"Dr and Mrs Reid remained at Putney from the Saturday afternoon till the Wednesday forenoon, and during that period Dr Reid was not only entirely free from pain, but in robust health and excellent spirits. By day he was active both in mind and body, occupying his time with the final revision of the last sheet of his volume, and in taking several long walks. The evenings were occupied with cheerful and profitable conversation, intermingled with much riotous fun with a merry group of children. Amid peals of laughter, in which he loudly joined, he would toss them in his arms, or, with one perched on each shoulder, chase the others round the room. There were, however, moments of deep seriousness, though not of despondency or sadness, especially when explaining privately to Dr Cormack the views which he entertained regarding his disease, and pointing out to him the state of the neck and the seat of the operation. He seemed very anxious to express strongly and frequently his gratitude to Drs Bennett, Simpson, and other friends, who had sanctioned the operation which had given him a fresh lease of life, and in particular to Mr Fergusson, for performing it. He enjoyed one evening very much when Dr Marshall Hall and Dr Tyler Smith joined the family party. His admiration for the genius of Dr Hall was unbounded, and if

it had not been for his disabled tongue, and the difficulty which he experienced in speaking, some animated discussions would have ensued on muscular contractility, and other points on which the two great physiologists disagreed." [1]

Dr Reid reached St Andrews in the end of October, and thankfully relinquished the "vagabond life," as he called it, which he had been leading throughout the summer. His University colleagues had kindly arranged that he should not be required to lecture, and he awaited in patience what the future had in store for him. A great sorrow was near at hand, one that caused him deeper anguish than anything that had befallen, or could befall himself. His infant son, doubly dear to him, for he had lost his elder boy, and both bore the christian name of his father, sickened in the first week of November, and died before another week was past. I almost hesitate to publish the letters he wrote on this occasion, although some of them have already been made public. But the deep tenderness and affectionateness of his nature were not discerned by many in his lifetime, and may be overlooked now. The following extracts need no comments. They are from letters addressed to his sisters, Mrs Glen and Mrs Taylor:—

"*St Andrews, November* 16, 1848.

"My dearest Catherine,—It is with a bursting heart that I have to intimate to you the death of your little favourite, my darling sweet boy, Henry. . . . He died last evening at half-past eight o'clock. He manifested the same sweet amiable temper during his illness as he did during his whole previous life. Though I feel satisfied that it is a happy change for my darling boy to leave the many evils and temptations of this wicked world for a life of eternal bliss; yet it is very, very hard, to part with him, he was so good,

[1] Medical Times, March 1851, pp. 266, 267.

so amiable, and so engaging. It has pleased the Lord to try me very severely, and I sincerely and ardently pray that it may all conduce to my eternal welfare and growth in grace."

"My dear Agnes,—It is in the deepest sorrow I have to announce to you the death of my sweet darling pet, Henry. . . . This is a most heavy and afflicting blow to me and to his poor mother; for he was so good tempered, so amiable, and so engaging, I cannot express to you how deeply his loss has affected me.

"It has pleased my God to try me of late severely and heavily with different chastisements, without doubt for my spiritual advantage, and I fervently pray that they may be attended by a humble and firm reliance upon his dealings with me, that they may wean my affections from the things of this world, and fix them upon those things that concern my eternal peace, and that if it please my God to spare my life, I may come out of all my afflictions with my former rebellious spirit against him broken and subdued."

At a later period, referring to the same event, he wrote to Dr Carpenter, soon after a friend of both had met with an affliction similar to his own,—

"· · · Both he and I have had to deplore the loss of one of our innocent darlings, who twine themselves so firmly around our hearts, that parting from them by their death is like tearing our heart-strings asunder. May it please your Heavenly Father to spare you this misery." [1]

The bereavement which did so much to deepen and strengthen Dr Reid's spiritual earnestness, did nothing to strengthen his afflicted body. He had scarcely laid in the

[1] Brit. and For. Med. Rev., Oct. 1849, p. 580.

grave his beloved child, before a rapid enlargement of the swelling in the neck led him to proceed to Edinburgh, where he underwent another operation on the 29th November. It was performed by Dr James Duncan, who set his own feelings aside, and yielded to Dr Reid's earnest solicitations, knowing that if he did not, he would only put his friend to the trouble of visiting London; for he had determined to have the disease extirpated, and to claim the redemption of a promise made by Mr Fergusson, that if the disease did not abate he would operate again.

It will be a relief to the reader to know, that although the operation was a tedious one, it did not preclude the administration of chloroform. In an account of it, which Dr Reid sent to Dr Adamson, he says: "I felt nothing of the external incision, and in fact the operation may be said to have been painless." It was thus, in some respects, a severer trial to his friends, James Duncan, John Goodsir, and James Spence, who were the surgeons in attendance, than to himself. They would not have advised the operation they were performing. It was of very doubtful efficacy; it was difficult of performance, and a grave task to the skilful, cautious, experienced surgeon who undertook it, and the two thoroughly-trained anatomists who assisted. It was perilous to the patient even at their hands; nor could the entire removal of the disease be effected. In the course of the operation, which was literally a protracted, intricate dissection, the same nerves and blood vessels which had been the subject of Dr Reid's most important experimental inquiries on the lower animals, were laid bare in himself by the surgeon's knife, and he ran the risk of suffering, and even of perishing by the very disasters against which he had sought to save his brethren by his investigations.[1] Yet though thoroughly aware of the hazard he was exposed to, which a more timorous man would have exaggerated when

[1] The medical reader will understand that the reference here is to the researches on the eighth pair, the sympathetic, the effects of venesection, and the entrance of air into the veins.

he himself was the patient, his demeanour when he partially awoke from the insensibility occasioned by chloroform, was not only resolute, but strangely dashed by gleams of the humour native to his character, which would not be quelled even on such an occasion. If there be any truth, as assuredly there is, in the belief that the half-conscious revelations of sleep, or delirium, often betray the deepest feelings of the rapt speaker, there is something to be learned of John Reid's heartiness and geniality from the gleeful mutterings, incoherent though they were, with which, during the lucid intervals in the course of the operation, he encouraged the surgeons to proceed. He remembered afterwards, and mentioned in a letter to Dr Adamson, that whilst his friends were anxiously applying a ligature to a divided artery, his strong desire was that it should be allowed "to spout" on the white neckcloth which one of them wore. It was hard that one who could thus smile at suffering, should endure so much, and all in vain.

He rapidly recovered from the effects of this operation, and was soon able to remove from the house of his kind host Professor Goodsir, and take up his abode with Mrs Blyth, at Bruntsfield Place. Health, appetite, and strength, rapidly returned; and after visiting his mother, he retraced his steps to St Andrews, which he reached on the 29th of December. But there was no city of rest or refuge for him on this side the grave. The fell disease which had apparently—though perhaps only apparently—lain dormant during his convalescence from the operation, appeared again in his neck, and he returned to Edinburgh to have another operation performed by Dr Duncan.

His courage, cheerfulness, and composure were unabated. The broken intervals of available time, which had been granted to him since his recovery from the first operation, had not been misspent, nor had he allowed himself the indulgences claimed by valetudinarians. As soon as his "Researches" were completed for the press, he had begun

among other things the study of Italian, nor would he allow his difficulty in articulation to prevent him from at least endeavouring to acquire the proper accent. He was walking about a room in Mrs Blyth's house, repeating a lesson from the Italian grammar, now and then stopping to toss up his little girl, when Dr Duncan and Mr Goodsir came to perform the third operation. No doubt he affected an indifference which he did not feel, that he might lessen the distress of his friends, to whom he had made known that the operation involved a peculiar peril; but this only showed his tender and impartial regard for all who were concerned. He might have died in the hands of the surgeons, and he was anxious to guard against their reputation suffering, should such an event occur, by warning his relations of its possibility, even in the most skilful and kindly hands. But the very utterance of this warning increased the necessity for lessening the anxiety of his family, and so he took the edge off the alarm he had given, by his affected enthusiasm in Italian vocables. The fondling of his child was no affectation, but the expression of unfeigned love towards one, who was too young to be informed that there was a reason for curtailing her innocent gambols.

The perils of the operation, which chloroform rendered painless, were safely surmounted, and Dr Reid[1] was soon on foot again.

[1] On this occasion, before receiving chloroform, Dr Reid expressed to Dr Duncan his conviction of the risk he ran of death *during the operation*, from air entering the veins (through the internal jugular). Mr Goodsir has described to me the thankfulness with which he at length saw the diseased gland safely removed from the thin blue vein, the puncture of which *might* have been fatal. Dr Reid had devoted a great deal of attention to the subject of the entrance of air into the circulation. His friend Dr Cormack was the author of a very able prize dissertation on the results of this dangerous occurrence; and Dr Reid had witnessed several of the experiments recorded in the essay; (Prize Thesis, Inaugural Dissertation on the Presence of Air in the Organs of Circulation. Edinburgh, August 1837.) At a later period, also, at Dr Cormack's request, he published in the London and Edinburgh Monthly Medical Journal, an elaborate article on the subject, which he reprinted in his collected papers. (Medical Times, March 1851,

This operation was performed on the 1st of January 1849, and was felt by the sufferer to be but an ominous commencement of a new year. In writing concerning it, on January 6th, to Mr Fergusson, he specially mentions, that it had been performed on New Year's day, and adds, "I hope that after this triple operation, I may be allowed some respite. I have at least not shrinked from the application of those means which have been thought advisable, and I now calmly leave the result to Providence." [1]

A week later he wrote to his mother:—

"*St Andrews, January* 14, 1849.

"My dear Mother,— . . . You are aware that I kept my new year[2] by having another operation performed. I hope that this is the last I may be called upon to endure."

The year of suffering had now completed its circle. The cruel malady began in December 1847, and continued to the very end of December 1848: Now, however, there was strong reason to believe that it had been rooted out. All suffering was gone. Appetite, strength, and cheerfulness had returned. The instinct of life was strong in the vigorous frame of the courageous patient, and his ruddy complexion gave no token of latent disease. John Reid had no wish to die. Death had lost its terrors for him; and to none is life so sweet, as to those who have lost all fear to die. The true end and worth

p. 265; Anat. and Phys. Res., p. 539.) It will thus be understood, that few could appreciate the risk he ran so well as Dr Reid—who, without anticipating the interest which he was one day to have in the matter himself had studied the particulars of every fatal case on record. The medical reader who wishes to judge of the justice of this remark, should read the article contained in the collected researches, entitled, "On the Effects of the Entrance of Air into the Veins," p. 539.

[1] Med. Times, March 1851, p. 267.

[2] To appreciate this allusion, English readers must be reminded, that New-year's day is the one national festival-day of Scotland. Except in towns, and among children, Christmas is not generally held as a holiday in any sense of that word, unless among members of the Episcopal churches.

of life now appeared to him as they had never done before, and in devout studies and cheerful labour he was prepared to spend the length of days which God might give him. Naturally a hopeful, stout-hearted man, he was to a rare extent, free from any tendency to hypochondria; and he had not one of those imaginations, which, when roused into activity by forebodings of evil, picture to themselves on the horizon of the future, shapes of horror which never come. He could more than realise with Macbeth, that

> "Present fears
> Are less than horrible imaginings;"

for fear was not present with him. The future was doubtful, but not at all hopeless. Convalescence is always a re-awakening and resurrection, and the outer world wears a look of forgotten beauty to the infant-like gaze of him who has just risen from a sick-bed. To John Reid's perennial cheerfulness was added this transient flush and bloom. It was natural, accordingly, that he should write thus:—

"*St Andrews, January* 19, 1849.

"My dear Fergusson,—I wrote you nearly a fortnight ago, that I had got the rest of the enlarged glands in the neck extirpated. I have been at home here for the last eight days; or rather since last Saturday. I am quite strong; and have been taking a round at golf in our far-famed links, those days that the weather permitted. I have a capital appetite, sleep like a top, and am altogether a different person since you took me by the hand. I hope I may have as favourable a report to give you of myself a month or two hence. In the meantime I feel most grateful for the relief I have experienced through your aid.—Believe me, my dear Fergusson, your sincere friend,

"John Reid." [1]

1 Medical Times, March 1851, p. 267.

"A month or two hence!" At least that amount of respite from disease might surely be counted on, even if the worst should happen. To some men the suspense of such waiting would have been intolerable, but it was no tax on John Reid's unfaltering patience; and he had not long to wait. A week was all; before the first month of the new year had reached a close, all hope was at an end. The shadow, which it had been fondly hoped had gone back upon the dial in token of lengthened life, had shone but dimly and uncertainly amidst the clouds of his recent trials, but now in the clear light it was too plain that it was moving fast onward. The shades were pointing eastwards, and the night was at hand.

Here are the earliest announcements of the wreck of his hopes, addressed to two of his distant medical friends.

"*St Andrews, January* 29, 1849.

"My dear Cormack,— . . . . Within the last two or three days I have noticed some hardness and uneasiness in the base of the tongue and pharynx [the throat] which give me a feeling of great insecurity. It is out of the reach of an operation, or I would have it performed. I wrote Fergusson a few days ago, in which I gave him a very flattering account of my condition, for I had not then made this discovery. A short time will decide whether it is a return of the disease or not, and in the meantime I must endeavour to wait patiently and submissively the result, but I do not conceal from you that I fear the worst. No doubt this sudden blasting of all the hopes that I had begun to cherish, that my life might be prolonged a few years longer, is hard to bear; but I hope, through divine aid from my Lord and Saviour, to be able to bow submissive to the chastening rod, and to resign all that is beloved and dear to me on earth, with the hope that we may be reunited in a better world, to part no more. Though I have expressed to you freely my suspicions of the worst, I am anxious that you should not say *much* about them until I have watched the suspected parts a little, and

have satisfied myself more fully of the nature of the changes there. . . .—Your very sincere friend,

"JOHN REID."[1]

"*St Andrews, January* 30, 1849.

"MY DEAR FERGUSSON,—I have a less cheering account to give you of my health than I did a few days ago."

Some medical details follow, related with anatomical minuteness and precision; and ending with a statement, that the chief morbid appearance—

"presents many of the characters of a renewal of the disease. This was of course a sad damper to the hopes I had begun to entertain of ultimate recovery. Unfortunately the position, and diffused character of the hardness, render its extirpation impossible, otherwise I would have it cut out immediately. . . . Whatever be the result, I cannot feel the less indebted to you for the relief from suffering for the last five months which I have enjoyed, and the additional time which it has afforded me for preparing myself for that eternal world, to which we are all more or less rapidly hastening. I would very willingly undergo, any day, the operation you performed upon me, for a small part only of that relief from suffering which it has afforded me.—Believe me your very sincere friend,

"JOHN REID."[2]

Seldom, surely, has a more striking display of patience, courage, and faith been made, than appears in these private letters. The active courage of a heroic man who lamented that he could not again be the surgeon's unflinching patient; the passive submissiveness and meek endurance of an uncomplaining gentle-hearted woman; the composed judgment and calm verdict on his own case; the unselfish, generous desire to assure his friend, that he never should forget his obligations to his kindness; the tender tone of both letters; and the unfaltering

[1] Op. et loc. cit. [2] Op. et loc. cit.

confession of unshaken trust in his Lord and Saviour, convey lessons which may interpret themselves alike to the thoughtless and to the thoughtful. Few men learned more quickly and profoundly than John Reid, that "tribulation worketh patience; and patience experience; and experience hope."

His sufferings from the return of the disease were not (at least in his own estimation), for some considerable time, severe; and he was slow to reveal to his relatives his true condition. For a brief season his anxious desire to spare their feelings warred in his heart with his scrupulous truthfulness, but before long the latter prevailed. A near relative offered to send him a choice terrier, which in other circumstances would have been very welcome to such a lover of animals. In reply he wrote, on the 14th February,—

"· · · I regret to say that I have lately observed symptoms of the return of the disease under which I have for some time laboured; under these circumstances, you can readily understand that I feel little desire for the terrier you have been so good as to offer me. . . . My general health is excellent, and I am as able for any of my duties, except talking, as ever I was; but it would be wrong in me to resume my practice, so long as I am threatened with a return of the disease, which would soon unfit me for all active duties. Under all my trials and chastisements, I perceive the hand of a merciful and kind Father, who finding that prosperity and benefits had no effect in turning me from the evil of my ways, has laid upon me the hand of affliction, that my eyes may be opened to a true sense of my sinful condition by nature and practice, and stimulated to seek salvation through the merits and mediation of my Saviour, through whom alone these are to be found. May you, my dear ——, not delay till too late this important preparation for that day, when we all shall be required to give an account of the deeds done in the body, is the earnest prayer of your very affectionate . . .

"John Reid."

The following letters to different friends will show how matters went on to the close of March :—

To Dr Cormack.

"*February* 23.

"I regret that I cannot give you a more favourable account of my own health; that the disease is making considerable progress I entertain no doubt. The pain is not yet so severe as to oblige me to have recourse to opiates. I sleep and eat well; my general health is good, and I pass my time partly in carrying on some physiological pursuits, and partly in preparing myself for that eternal world to which I am rapidly hastening. I thank God that He has blessed me with a calm and contented spirit,—that I can look to the rapidly-approaching period of my dissolution patiently and without murmur. It is not on any supposed merits or good deeds of my own that I build my hope, for I know that these are but filthy rags in the sight of God; but my trust is placed on Him who offered himself up as an atoning sacrifice, that guilty men might through Him, come unto God, and enjoy eternal life."[1]

To Dr Duncan.

"*St Andrews, March* 8, 1849.

"My dear Duncan,—I have to thank you for your very kind letter. . . . I feel at times a good deal of uneasiness in the back part of the tongue and throat, amounting, at times, almost to pain; but it does not prevent me from sleeping well, eating well, reading, and working at the microscope as formerly. I am working at a very rare fish which presents some very peculiar structures, and I have sometimes lately been at the microscope six hours at a stretch. I do not expect this to continue long, as the hardness and swelling are, I believe, steadily, though slowly, increasing. I wish the disease had been so situated that we could have tried the

[1] Medical Times, March 1851, p. 268.

effect of another operation. I can assure you that any amount of temporary pain is a blessing compared with that constant pain to which I may look forward, and may soon expect. . . .

"One's views of the nature and character of those things we attach very great importance to when in health and busily engaged in our usual avocations, change wonderfully when the time is rapidly approaching, as it is with me, for bidding them an eternal farewell. Of course I would have been most anxious to have my life prolonged, and I feel it a very hard thing to make up my mind to part with wife and child, my kind friends and my books, while still in the prime of life; but, on the other hand, when I think that I might have been cut off suddenly without having time afforded me to repent me of my sins, and to solicit pardon through the merits and mediation of my Redeemer, I feel that I have great reason to thank God for all his merciful dispensations to me. . . . Believe me, my dear Duncan, your most sincere friend,

"JOHN REID."

Soon after this, Dr Cormack had the misfortune to lose his eldest child, and Mrs Cormack's life was placed in great peril. To his bereaved friend, whom he had visited in very different circumstances in the preceding autumn, he wrote as follows:—

"It was with feelings of deep sorrow that Mrs Reid and I received the news of the death of your sweet and interesting child; and I can assure you that we deeply sympathise with you and Mrs Cormack on the melancholy event. We know, from experience, what it is to lose one of those innocent and sweet darlings who have entwined themselves so firmly around our hearts that the separation is agonising in the extreme. After time has somewhat blunted the agony, we are then able to derive sweet consolation from that source to which I know you and Mrs Cormack have looked for aid in this your

day of visitation. Your poor girl has escaped from a sinful and troubled world to a region of perfect beatitude. And how willingly would I, at this moment, join her and my own two little innocents were it my Father's will that I should do so! It is a glorious privilege to hope that she may one day welcome, with joyous countenance, the arrival of her father and mother at the regions of bliss. 'No chastisement for the present seemeth to be joyous, but grievous; nevertheless, afterwards, it yieldeth the peaceable fruit of righteousness unto them which are exercised thereby.' May it be your privilege, as it has been mine, to rejoice under the chastening hand of our Heavenly Father, and to feel that those whom He loveth He chasteneth. Our sinful nature will sometimes rebel and repine, as it is my experience sometimes to feel, under the trials and sorrows to which we are subjected; but a consideration of the amazing love of our Heavenly Father in sending His beloved Son into this world to be offered up as an atoning sacrifice, that we, through him, might enjoy eternal life, is more than sufficient to quiet these instigations of the Evil One, and to satisfy the mind that He afflicts not willingly, but for our eternal good. The Lord has dealt bountifully with you in raising up your beloved partner in life, as it were from the dead; and it is not for us to murmur when He takes away a small part only of what He has bestowed upon us, to return it on a future day more pure and happy than it could be on earth. That this severe affliction may promote your growth in grace, and direct your mind more strongly than ever to those things which are heavenly and eternal, is the sincere prayer of your affectionate friend,

"JOHN REID."[1]

About this period, also, Dr Carpenter had completed the impartial review[2] of Dr Reid's Researches, to which I have already been so much indebted.[3]

[1] Medical Times, March 1851, p. 268.

[2] Brit. and For. Medical Rev., April 1849.

[3] *Ante*, p. 107.

"Having been made aware," says Dr Carpenter, "that indications of the return of the disease had presented themselves, and fearing that Dr Reid might possibly not live to see the review of his book in the April number of this Journal, the writer sent him a copy of the article as soon as it was in print; at the same time expressing his fear lest the desire to avoid being biassed by private friendship had made the review *less* eulogistic than the work deserved. The following was Dr Reid's reply, dated March 17, 1849:—

"Instead of your notice of my book being less eulogistic than I might fairly expect, I assure you, most sincerely, that I am convinced that you have spoken more favourably of my endeavours to advance the scientific branches of medicine than they deserve, and that your estimate of them has been biassed by personal friendship for the author. Be this as it may, it has afforded me unfeigned satisfaction to know that you entertain so high an opinion of the contents of my book. I know that I have laboured zealously and honestly to arrive at the truth on those points I set myself to examine and investigate; and it is a great satisfaction to find that my labours have not been in vain; for very few of the conclusions at which I arrived, in the different investigations I have entered upon, have been called in question on satisfactory grounds. I do not lay claim to any merit, except that of patience and caution. . . .

"That my former disease has returned in the back part of my tongue, and isthmus of the fauces [throat], I entertain no doubt. The pain and uneasiness, though sufficiently annoying at times, especially within the last fortnight, are not yet so severe as to prevent me from reading and studying as usual. My general health is remarkably good, my appetite excellent, and I have not yet had recourse to opiates. Part of each week-day I spend in professional study, part in preparing myself for that great and solemn occasion when I shall be called upon to give an account of the deeds done in

the body, and part in recreation. My mind is perfectly calm, and I can play with my child, or enter into the enjoyment of innocent mirth, with as much relish as ever. My mind is made up for the worst; and when once this is done, all the fluctuations of hope and doubt are at an end, and the mind settles down into comparative calmness. I still, however, feel that I have not obtained that inward assurance of my Heavenly Father's favour which some experience under circumstances similar to mine; but I pray earnestly for forgiveness for the sins of my past life, and leave with hope the issue in His hands."[1]

In this letter Dr Reid refers to his mind being perfectly calm. He gave a striking proof of this shortly before the date of his communication to Dr Carpenter. Dr J. Hughes Bennett had published in 1849 a work on cancerous diseases, in which, with Dr Reid's entire approval, his case was referred to. Dr Reid reviewed the book anonymously, suggesting a name for the form of disease under which he laboured, discussing the question of the curability of cancer, the advisability of surgical operation, and other medical topics, and commending the zeal, industry, and success in research of the author. Extracts from the review would not be acceptable to unprofessional readers; but it is worth the attention of medical men, who will find it in the "London Journal of Medicine," March 1849, p. 242. No one who reads the review would gather from its tone or statements, that its writer was dying of the disease, whose symptoms, progress, and issue he so composedly discusses.

A new month brought new perils with it. Dr Reid attended a soiree of the Philosophical Society of St Andrews,

[1] Brit. and For. Med. Rev., Oct. 1849, p. 580. A very intimate friend of Dr Reid's remarked to me, that the first paragraph of the passage quoted from the letter to Dr Carpenter "was the *vainest* thing Dr Reid had ever to his knowledge uttered;" but he immediately added, that it was *not* vain, for Dr Reid had said less than the truth in his own praise.

on one of the first days of April, and suffered by his exertions to explain several microscopic objects to those who attended. The Rev. Mr Lothian, who was present, says, "he took great pains in demonstrating to the ladies and other visitors the circulation of the blood, as displayed by means of the microscope, in the foot of a common frog. It was generally believed that the fatigue he underwent on this occasion, with the irritation of the diseased organs of speech, consequent on his repeated explanations of the phenomenon under consideration, hastened his end." On his way home from the heated room on a chill spring night, he caught cold, and was laid up with a violent attack of inflammation of the throat, which, besides occasioning much suffering, and aggravation of the local malady, threatened death by suffocation. A farewell visit, for such he knew it must be, which he intended to pay to his relatives in Edinburgh, Bathgate, and Glasgow, was thus prevented, and he wrote in consequence several letters, from which the following are extracts. The omitted portions refer to the affairs of his relatives, and are remarkable for their minuteness and precision.

"*St Andrews, April* 6, 1849.

"My dearest Mother,—You are aware that it was my intention to have visited you at Bathgate on Saturday last, and to have remained with you until Monday, but it has pleased my Heavenly Father to order it otherwise. I am now able to go about the house again; but though this temporary attack of inflammation of the throat is going off, the original disease continues. I suffer a good deal of pain at times, and I see no prospect of any improvement. Though, in a temporal point of view, this is to be deplored, yet when I think of the spiritual advantages which it has yielded, I have great reason to rejoice and say, 'that it is good that I have been afflicted.' How paltry, trivial, and worthless are all the things of this evanescent world, when compared with what relates to us in that eternal world to

which we are all more or less rapidly hastening! The longest life on earth is but a speck in the boundless extent of eternity. . . ."

"*St Andrews, April* 6, 1849.

"MY DEAR ——,—I received your note requesting a book on anatomy to facilitate your study of fossils, . . . but it would delight me to see you here, and this could be better accomplished. . . . I am satisfied that I owe my success in life to the firmness with which I attached myself to a particular course of study. But while attending, my dear ——, with that steadiness and perseverance to the occupations allotted to us in life, which it is our duty to do, never forget for a moment that there is an eternal state of existence awaiting us, after we have served the ends designed for us in this transitory scene, and that our eternal happiness and misery depend upon the manner in which we have conducted ourselves in this state of probation on earth. May the divine truths of the Holy Scriptures be deeply engraven on your heart, and you may safely set all the evils of this world at defiance. Believe me, my dear ——, your very affectionate . . .

"JOHN REID."

Of the same date is a letter to Mrs Taylor much resembling that to his mother. On the 9th of April he writes again to the former, in reference to a collateral relation in whom they were both interested, and enters minutely into business details affecting the object of their sympathy. In connection with these, he announces the arrangements which he has made as to the disposal of his property after his death, and concludes,—

"I am very much the same as when I wrote you last. I have not been suffering much pain of late; but with such a disease about me, I cannot but look forward to the time

when I shall feel it a relief to be removed from this world of pain and sorrow. My kindest regards to Andrew, and believe me, my dearest sister, your very affectionate brother,

"JOHN."

After completing this letter, it seems to have suddenly occurred to him that he was writing on a memorable day, and he has added the following postscript, the last sentence of which seems to me inexpressibly touching, as coming from so grave and staid a man as the writer:—

"This happens to be my birth-day. I am to-day forty years of age. I wish I had been able to look back with more satisfaction upon my past life. In looking back upon the years I have spent in this life, I see nothing but a long array of sins and follies, so that, had I only my own merits to trust to, in soliciting the favour of my Heavenly Father, how miserable would be my condition. Blessed be God, who has opened up to us a way of safety through the merits and mediation of our Redeemer. This day forty years, my father and mother, no doubt, were full of joy, that a man-child had been brought into the world!"

On the 16th day of April he writes to a relative who had recovered from a dangerous illness,—

"If I should not have an opportunity of meeting you again in this world, I may take this occasion to express my most sincere and heartfelt wishes for your welfare in this world, and above all for your spiritual edification and growth in grace. I hope your late severe illness has left impressions on your mind never to be effaced. Did you feel that you were prepared for so speedy a summons into the presence of the Judge, if it had pleased Him to have ordered it so? Are you sure that you will receive any warning that your appointed course on earth is run? It has graciously pleased

my Heavenly Father to give me a comparatively long warning, and the possession of an unclouded intellect, to profit by that warning. I have fled to the Cross for refuge and for safety; not trusting in any merits of my own, for I feel I have none, but entirely in the atoning sacrifice of my Redeemer."

Of the same date is a letter to his mother,—

"My dearest Mother,—The inflammation in my throat is so far gone, that I would have ventured out of doors before this time, had the weather been favourable. I cannot say that I improve in other respects, but I have great reason to thank my God that he has laid upon me no greater burden than I am able to bear. Though I suffer pain and uneasiness at times, yet these are never very severe. . . . I may probably write you a few words soon again. In the meantime, believe me, my dearest mother, your very affectionate son,

"John Reid."

In the course of this month he completed his last scientific research. That he felt it to be his last, was manifest to all around him. One of the ladies of his family remarked, that he worked at it as if "his life depended on it;" and his own statement to Dr Duncan,[1] that he had "sometimes lately been at the microscope six hours at a stretch," fully corroborates the remark. His latest investigation was into the structure of a very rare fish, the Vaagmaer (*Vagmarus Islandicus*), an inhabitant of the northern seas, seldom found upon our shores. Whilst dissecting it, Dr Reid discovered that the cartilage between the joints of the backbone presented peculiarities hitherto unobserved in any creature; and he was led in consequence to publish an account of his discovery, along with a description of all that seemed otherwise interesting in reference to the animal.

[1] Letter of 8th March 1849.

The account was read to the Royal Society of Edinburgh in April 1849, and would have been published in their Transactions, had it not been previously offered to the Annals of Natural History, in which it appeared in the June number for that year. I was the bearer of a communication from Professor Goodsir in reference to this inquiry, when I went to the May examination of the medical graduates at St Andrews; and I availed myself of the message to pay what I mournfully felt would be my last visit to John Reid. He had little as yet of the invalid in his look, and was as uncomplaining as ever. Dr Andrew Anderson, of Glasgow, accompanied me, and we spent some two hours with our friend, who kindly welcomed us, and forbade us to shorten our visit, as he was most active and able to see visitors in the evening when we called. The overt subject of conversation was the Vaagmaer, though very different matters, I believe, occupied the hearts of us all. The fish was brought out of the antiseptic liquid in which it was preserved, and its curious peucliarities explained, with the help of a fine microscope, through which we were shown the singular structure of the vertebral cartilage. Dr Reid grew animated as he proceeded in a task so congenial, nor was his speech markedly inarticulate, or at all difficult to follow. He ended by giving us specimens of parts of the Vaagmaer; Dr Anderson being charged with a section of the vertebral cartilage for Dr Reid's old friend Dr Allen Thomson, now Professor of Anatomy in Glasgow; and I being furnished with portions of the silvery coating of the fish, on the probable chemical composition of which we conversed at some length.[1] We

[1] I hoped to have furnished Dr Reid with an analysis of the cuticular coating referred to; but the small quantity of it at my disposal was so saturated with alum and corrosive sublimate, that an analysis was impossible. It was Dr Reid's opinion as well as my own, that the metallic splendour so characteristic of the external covering of fishes, as well as of portions of other animal organs, such as the tapetum (or back-mirror) of the eye, is much more dependent upon the physical arrangement of the molecules of the shining tissue than upon its chemical composition.

accepted these gifts much more as mementos than as objects of curiosity, and bade him good night, thankful to have seen him so serene and even cheerful, and still more thankful that we knew on what an unfailing Rock his serenity reposed.

He spent next day with us and the other examiners in the Examination Hall; and I still recall the quiet and characteristic humour with which, in reference to the rather strange answers of one of the candidates, he smilingly deprecated *any* mode of treating cholera being considered illegitimate. He parted with us in the afternoon, saying that he would go home and "try to get some rest," and we never met again.

This was his last college appearance. Soon after it, and probably in consequence of the fatigue it occasioned, he had another severe attack of inflammation in the throat, and his sufferings from difficulty of breathing were such, that it was contemplated to perform an operation to save him from suffocation.[1] But this peril was averted.

His strength, however, rapidly diminished, and the disease as rapidly increased. On 12th May he wrote from his sick-bed to Professor Goodsir,—"I feel very weak, quite unable for much exertion, and have no desire to get out of bed." From this time forward he wrote seldom, except to his mother, but the few letters that were written show the same strong faith and hope, the same unfaltering fortitude, undimmed intellect, and great patience and composure which have appeared in his earlier letters. The following extracts bring us to the close of June, after which he held little communication with the outer world.

[1] For several days Dr Adamson carried in his pocket a tracheotomy-tube, which Dr Reid instructed him to apply, should the difficulty of breathing increase. At a later period, when death was not very far off, he stated that though at an earlier period he would have submitted to the operation, he desired now that in the event of the difficulty of breathing returning nothing should be done. "I will meddle no farther," were his words to Dr Adamson, "but let the disease take its course."

To Dr John Hughes Bennett.

"*St Andrews, May* 12, 1849.

"My dear Bennett,—I should have answered your letter before this time, but I have been confined closely to bed all week by an inflammation of the throat."

An account of the particulars of his condition then follows, brief, but as minute and unimpassioned as if it had been a pathological report on the case of another, and the letter proceeds,—

"Within the last seven weeks the pain and uneasiness have been considerable; but I have never had the severe darting pain along the branches of the fifth pair [of nerves] which I experienced previous to the first operation by Fergusson. I obtain good nights from the use of opiates. Death is the only remedy I can look to for relief from the sufferings of the body. Instead of regretting the first operation, I have every reason to be grateful for the relief and comfort which it afforded me for several months, and willingly, most willingly, would I undergo it again for the same advantages. I am not at all certain about the propriety of the two operations for the extirpation of the glands, though no one was more anxious for their performance than myself. . . . Everything that was done, was done for the best, and I feel most grateful for the kind and affectionate regard shown me by so many of my friends."

To a Medical Friend.

"*May* 12, 1849.

"I look upon my relations with this world as rapidly closing. When I was in good health like you, I foolishly fancied that death and eternity were things which I need be in no immediate hurry to make subjects of serious contemplation; and if it had pleased my Heavenly Father to have called me off suddenly, instead of having given me ample warn-

ing, how terrible might have been my fate. Have you thought of this, my dear ——? Are you at present prepared to give an account of the deeds done in the body?—Believe me, my dear ——, your affectionate friend,

"JOHN REID."

"*St Andrews, May* 14, 1849.

"MY DEAREST MOTHER,—I have been again confined to bed all the last week from another attack of inflammation of the throat. This is again better, but the original disease, I am sorry to say, continues to increase, and I am gradually getting worse. I suffer a good deal of uneasiness at times, but thanks to my God, he has as yet laid upon me no greater burden than I am able to bear. I have every reason to feel grateful in finding myself surrounded by numerous comforts, in having an affectionate and loving wife and many kind friends around me, and above all, in having my attention directed to a throne of grace through the merits and mediation of my Redeemer. I entertain no hopes of my recovery, and life to me in my present condition is no boon. While I lament and mourn over the sins and follies of my past life, and confess the deep depravity of my whole nature, I am more and more urged to take refuge against the coming day of wrath in the Cross of Christ, and to trust alone in His merits and mediation for regaining favour with that Almighty Father I have so grievously sinned against. . . . May God, in his infinite mercy, grant that we may, after a brief separation on earth, again meet in that heavenly kingdom where there is no sorrowing and no parting.

"I was much delighted by visits from Andrew Taylor and Mary, and I was very sorry when they left me. As I do not expect to be ever able to leave St Andrews again to visit any of my relations, I need not say, that a visit from my dear mother, or any of my other relations to me here would be most grateful to me. No one writes to me from Bathgate, so that I know not what is going on there. We had a letter

from Catherine yesterday, telling us that she had settled in her new quarters.

"I most sincerely hope that Catherine's leaving you has not materially interfered with your comforts. My kindest regards to Patrick and all friends at Easton. Believe me, my dear mother, your very affectionate son,

"JOHN REID."

In June I have but one letter: it is not dated,—

"*St Andrews, Saturday evening.*

"MY DEAR MOTHER,—I write you a few lines to let you know how I am at present.

"About three weeks ago I had another severe attack of inflammation of the throat, and since that time I have not been out of my bedroom, and am rarely more than three hours a day out of bed. I am considerably weaker since last attack, but the pain is not worse, and you may feel assured that I have every attention and comfort which an affectionate, attentive, and most devoted wife, aided by many kind neighbours, can procure for me. . . . . Your very affectionate son,

"JOHN REID."

Dr Carpenter also has published an extract from a letter of the same date,—

"I have for the last two months suffered severely at different times from inflammation of the throat, which more than once threatened to suffocate me. I am at present very weak, being confined to bed the greater part of the day. I suffer a good deal of uneasiness and pain at times; but, on the whole, I have great reason to thank God for his mercies to me in this respect; and I can generally command ease and comparative comfort by a dose of morphia."

"The letter," continues Dr Carpenter, "was completed by Mrs Reid, who simply and touchingly says of him,—'It is painful to him to speak, and he seldom does so; but with all his suffering he is always patient and submissive, and waits the Lord's will for his removal from all his trials.'"[1]

Through these later weeks onwards to his death, Dr Reid was never without the affectionate tendance of more than one kind-hearted pious lady, who aided Mrs Reid in her sorrowful task. By one of them I have been favoured with some notes of his last days, which I shall here and in another place turn to account, without affecting chronological minuteness, as to the dates of the several details.

From the period of his recovery from the first operation, onwards to May 1849, he embraced every opportunity of attending public worship which came in his way. The Sabbath he sacredly observed. In this reverential Sabbath keeping, indeed, so unlike the distracted Doctor's Sunday of an earlier period of his life; in his solemn regard for the celebration of the Lord's Supper, and in the deepened fervour and earnestness of his family prayers, were manifest to all about him, how great was the change which had passed upon him. It was remarked, also, that whereas at an earlier period, he had occasionally engaged in the family circle, in controversial discussion on religious matters, latterly he never did.

A great change also came over him in reference to the books which he read. He had given rather a conspicuous place in his library to a miscellaneous collection of plays, entitled Bell's Theatre, which he now put out of sight, along with Fielding's writings, which he had previously somewhat openly commended as works of high excellence. When he did so, his standard of worth was literary merit, and it does not appear, that in reference to this his opinion changed when he ceased to praise those books. He had come to

[1] Brit. and For. Med. Rev., Oct. 1849, p. 581.

consider moral worth as a necessary quality in all writings which were not bare scientific treatises. He fell back, accordingly, with renewed delight, on his old favourites which were not low in aim, or tinctured with immorality. Cowper's poems were often read, and some of Thomson's, especially his Address to the Deity. "Butler's Analogy" was a peculiarly acceptable work to a mind so logical as John Reid's. He repeatedly expressed the highest estimate of it, and referred to chap. v., part ii., as a sufficient answer to the objections made to Redemption by means of a Mediator and Atoning Saviour. "Lord Lyttleton's Conversion of St Paul," "Locke on the Reasonableness of Christianity," and "Watson's Apology for the Bible," had been favourites with him before his illness, and were always read with satisfaction. Latterly, however, he added to these, works of a different tone, for which, formerly, he had felt no relish, but which came now, first to supplement and then to replace his older favourites. Among those which he most loved, and returned to more than once, were: Jeremy Taylor's Sermons, and his Holy Living and Dying. The Holy Dying he specially commended. He set a similar value on the Pilgrim's Progress; Baxter's Saint's Rest; his Call to the Unconverted, and his Sermon "On the folly and danger of making light of Christ;" Doddridge's Rise and Progress of Religion in the Soul; several of Robert Hall's writings, especially those on Unitarianism; and Wilberforce's Practical View of Christianity. During the last year of his life, he also read Jenyn's Internal Evidence; Sherlock on Death; Campbell's Dissertations, and his Translation of the Gospels; and Muir on the Holy Spirit, of which he said, "I read it all, and liked it much." Within the same period, likewise, he perused with pleasure the Rev. Dr Hamilton's Mount of Olives; the Invalid's Hymn Book, edited by the Rev. Hugh White, an Irish clergyman; the lives of Sir T. F. Buxton, Simeon of Cambridge; John Campbell the African Missionary, and Williams the Martyr-Missionary of the South Seas. These, with the

Bible, were his principal and most acceptable reading. There was nothing narrow or sectarian in his religious tastes.

For a considerable time, a portion of each day was devoted to miscellaneous reading, which he continued to relish till within six weeks of his death. Among the books read were Sir Charles Bell's Bridgewater Treatise on the Hand; Whewell's General Physics; Macaulay's Essays from the Edinburgh Review; Crabbe's Poems; the Treatise in the Family Library on Insects; one on the Vegetable Food of Man; and the current Medical Periodicals. Some of these works were read to him, and he occasionally commented on them in a characteristic fashion. Sufferers from hopelessly incurable disease may well be borne with, when they express, what the unsuffering listener judges to be a morbid aversion to allusions, especially admiring ones, to the wonderful structure of the healthy human body. But there was no secular subject on which the brave and suffering invalid dwelt with more pleasure, than the evidences of God's wise and merciful design, which the construction of all the creatures of his hands displays. He would forget the pain which speaking occasioned, in enlarging upon it to the ladies of his family, and loved to point out the beautiful type and symbol of man's resurrection which the transformation of insects supplies, dwelling especially on the curious changes which the ant-lion undergoes.

Gradually as he grew worse, he read less of secular works, and more of religious ones; but to the last, fewer *formal* references were made or have been remembered. Among the notes given me I find two, significant, like the title-pages of large volumes, of whole chapters of opinions, such as the reader of the letters I have quoted can fill in for himself. The one runs thus:—"He expressed both regret and surprise with regard to a neighbour who did not believe in the divinity of Christ, and consequently realised Him only as an example of godliness, and he often pointed out passages in the Scrip-

tures which seemed to him conclusive on this point." The other states that, "He mentioned the realising of the future happiness of God's people as quite enough to prevent all regret either for ourselves or for others, if called away from this world."

Such verbatim reports, however, of his actual religious utterances are not needed. The deepest and fullest proof of John Reid's love of God and fellowship with Christ, is to be found in the preference of the Bible to all other books, which characterised the closing year of his life. It was, in the language of my informant, his "chief delight." It had not been so before. In his singularly well-balanced healthy spirit, there was one morbid weakness, and he was conscious of it himself. For books, he had a reverence peculiar, and quite idolatrous. He had exposed himself during his college career to the charge of ungenerousness, because he would not lend the class-books, which most students, even those who read them, hold cheap, and take little care of. At a later period, he regarded his library as sacred. Of certain favourite authors he had duplicate copies, but neither was intended for loan; and he did not like even his most intimate friends to remove any of his volumes from their shelves. At intervals he had a certain number of prized volumes bound. Their arrival was always welcomed with lively pleasure, and he referred to them as things which he loved as if they were human friends. We have already seen how they took rank with friends and children and wife, as things from which it was hard to part. But among the objects of this bibliomania the Bible found no place. He had no rare editions of it, and the every-day copies were left behind when he went to Paris, and forgotten in dusty corners when he returned. He set a certain value upon a German Bible, and he showed this, by declining to let it be taken from his shelves. Now all was changed. For more than a year the Bible had become for him a book, compared with which, all the libraries in the world were but as dust in the balance. Long before illness

made him unable to delight in the treasures of his book-shelves, they were made free to his friends. He gave me one in loan, and offered me others when I parted with him in May.

For himself the Bible was library enough. Through the long painful nights which he often spent alone in his study, it was his chief companion. He acquired in a short period an amazing mastery over its contents. His readings were chiefly in the New Testament and in the Psalms. The Prophets were less read, and the historical books of the Old Testament least of all. It was natural that one circumstanced as he was should choose his reading thus, and God is very merciful, and has allowed his children a large liberty, as to preferring one part to another of that Scripture, which is "all given by inspiration." The Psalms were to John Reid as to other Christian invalids, especially welcome. I wonder a little that he did not more frequently read the book of Job, that most remarkable of all diaries of the invalid. The twenty-third Psalm, a remembrance of which, though there were none other, will link thousands of the redeemed in a common sympathy, he never tired of reading, or hearing read.

Thus cheered and comforted, he saw the dark valley in which all our lifelong we walk, grow darker before him; and the black shadow of death become blacker as it drew nearer; whilst he could say, "I will fear no evil; for Thou art with me: thy rod and thy staff they comfort me."

So the months of May and June went past, and it was plain to all that the end could not be far off. Like the forlorn Indian whose oarless canoe drifted slowly down the Niagara, and was inevitably moving towards the fatal Falls, John Reid saw each day separate him further from wife, and mother, and child, and friends; and the sound of the dark waters rose with increasing distinctness in the hearing of all. Neither could help the other, or stay the great River whose Sea is Death. Every moment made more dim the mourning

figures on the receding shore, and the helpless mariner could hear, though no other could, the swelling murmur of the waves that break upon the shore of eternity. But he had no dread of shipwreck; nor had they. The anchor was within the veil, and was certain to prove true.

Thus June closed, but there was yet another month of torture before him. The days had prematurely come, when he had to say, "I have no pleasure in them." The grinders had not ceased because they were few, nor were those that looked out of the windows darkened; but the doors were shut in the streets, and all the daughters of music were brought low. Yet his vigorous frame could be reduced only by a slow process of sapping and undermining, and the very serenity of his spirit protracted his sufferings. The only alteration which he could undergo was an alteration for the worse, and such, as he calmly anticipated, befell him. I will not linger over the physical agonies of his last days. Suffice it to say, that speech became impossible, and every breath occasioned suffering. The wounds of the two last operations opened afresh, one of them communicating with the mouth, so that even the painful effort to swallow, scarcely secured the entrance into the system of any food. Rapid emaciation followed the imperfect nutrition which was inseparable from this condition of slow starvation, and new pangs were soon felt by the emaciated, bedridden sufferer, such as are inseparable from the long confinement of a wasted body to one prostrate position. He was like Job when he exclaimed, "When I say my bed shall comfort me, my couch shall ease my complaint; then thou scarest me."

But he never betrayed impatience. He scarcely alluded to his sufferings; and if at all, only when they were past. About the close of the first week of July, his unconfessed torture from his position in bed was so manifest, that a hydrostatic couch was procured from Edinburgh. He expressed very strongly his gratefulness for the relief which it afforded, and only thereby betrayed the amount of suffer-

ing which it had relieved. The strongest expression of painful trial to which he gave utterance, took the shape of the meek prayer, "If it be the Lord's will, it would be a great blessing if I were taken away."

He exhibited, however, far more than mere passive patience. Invalids, even Christian ones, are often very selfish; and none should be judged hardly. Those who in health have been uncomplaining, considerate, and generous, are not unfrequently unreasonable and exacting in the sick room. Not many can stand its test; and it would be cruel to condemn those who have suffered sorely, have been long indulged, are hopelessly distempered in body, are weakened in mind, and see death near at hand. But for John Reid no such allowances were needed. He was solicitous to the last to give as little trouble as possible, and to spare the feelings of those about him. A striking proof of this has been mentioned to me. A kind lady with whom, in his more active days, he had spent many a pleasant hour, in watching the curious sea animals in the Bay of St Andrews, was present one day when the wounds in his neck were dressed, and suggested a mode of procedure, to which he at once assented. It was supposed, in consequence, that he approved of her suggestion, and his attendants were about to adopt it at the next dressing; but he begged that the previous treatment might be resumed, unless when the lady referred to was present, and then her method of dressing was to be followed. Gleams, even of the inextinguishable humour which in him, as in other sincere natures, flowed side by side with every unconstrained movement of the intellect and heart, appeared almost to the last.

One day when his faithful friend and medical attendant, Dr Adamson, was present at the dressing of the wounds, he remarked that they looked "healthy," using the term in a sense which every medical reader will understand. The word "healthy" was too much for John Reid, who turned round and smiled in his friend's face. Dr Adamson, fearing

that he might seem indifferent to the sufferer's hopeless condition, was anxious to explain; but all explanation was smilingly repelled. Health and he had long shaken hands; and he could not forbear an expression of surprise when it seemed to be suddenly hinted that he had been too hasty in saying farewell.

After the 7th of July he was not able to leave bed, and thereafter the disease made accelerated progress. Whilst yet able to leave bed, he wrote to his mother:—

"*St Andrews, July* 3, 1849.

"My dearest Mother,—As I know that you are always anxious to hear of me, from time to time, how I am, I write a few lines to tell you that I am nearly in the same state as when I wrote you last. I am still very weak, but my sufferings have not increased.

. . . . . .

"Give my warmest regards to all relations and friends around you; and believe me, my dearest mother, your very affectionate son,

"John Reid."

On the 11th he made a final effort to gratify the filial affection which in him was so strong, and here is his last letter. Except the one already given, he wrote no letters in this concluding month. The bold, round, upright handwriting is as marked in all its peculiarities as that of any of his earlier manuscripts; and no one, I am certain, who saw it, without knowledge of its date, would surmise when it was written.

"*St Andrews, July* 11, 1849.

"My dearest Mother,—Since writing you last, I have had no fresh attack of inflammation of the throat; but my appetite has failed considerably, and I [have] been losing strength, so that I have not been able to sit up for the last

three days. I have no wants which are not immediately and abundantly supplied; and my dear wife is unceasing and most judicious in her attendance upon me. As far as earthly comforts are concerned, I stand in need of nothing; but my true comfort and consolation must be sought for elsewhere. When I look back upon my past life, I see nothing but a dark array of sins and follies, and my only hopes of obtaining mercy rest on the atoning sacrifice of my Saviour.

"My kindest love to all our relations around you; and believe me, my dearest mother, your very affectionate son,

"JOHN REID."

In this as in previous letters, he had forbearingly treated of his sufferings, but they were fast reaching a crisis. Not long before its climax, Dr Hugh Cleghorn paid him a last visit. His dying friend, with pain and difficulty, succeeded in audibly articulating, "the world is behind," and with these solemn and cheering words, they bade farewell. On the 14th, acute suffering came on; on the 16th, the cancer opened an artery, and the bleeding which followed seemed the swift precursor of death; but the strong body would not yet give way. On the 18th, violent hæmorrhage occurred, and all thought and all hoped that death was at hand; but still the last enemy was kept at bay. For several days no food or drink was taken. Every function but breathing seemed suspended. Yet, when sensitiveness to all else appeared extinct, the consciousness of agony returned, and before the final close, the suffering, but for chloroform, would have been extreme. To the last he was contented, trustful, and calm. They read the Scriptures and prayed with him so long as he could listen; and at length, on the 30th July 1849, the brave spirit passed to its eternal rest, and death was swallowed up in victory.

CHAPTER VIII.

CONCLUSION.

Here as through a glass, we darkly,
Doubtfully, and dimly gaze;
Even the brightest things have shadows,
Round the clearest hangs a haze:
They who bask within the blaze
Of the pure, unshaded rays
In the realms of bliss,
Changed have for doubtful vision,
Perfect sight and full fruition.
They know there, as they are known,
Christ doth claim them as his own,
Where they stand,
Round about the Throne of Grace,
Gazing on Him face to face,
In the Land of Light,
The bright immortal Land.

1 *Cor.* xiii. 12.

I WAS in St Andrews on the 1st of August, and remained to be present at John Reid's funeral on the 2d. It was a singularly bright and beautiful day, and along with two medical friends, I wandered forth through the quiet streets, over which brooded a solemn air of hushed expectancy, as we instinctively turned our footsteps towards the church-yard in which his burial was to be. The church-yard lies around the ruined cathedral of St Andrews and the tower of St Regulus, one of the most ancient ecclesiastical buildings in Scotland. Its striking situation close to the sea, its historical associations which go back over centuries, and the many lettered men who are interred within its walls, make it one of the most interesting burial-places in the country. Whilst my friends ascended the lofty tower, which I could not climb, I sat down on a broad tombstone near its base, and turned my eyes

towards the spot where the grave of John Reid had been prepared. A little girl was standing at its edge, gazing into it, with the look of quiet awe and wonder with which children may be seen regarding that last and peaceful cradle which awaits us all. Her presence was altogether in keeping with my own feelings. Never had the grave seemed less an object of apprehension or horror than it did that day. It was difficult to realise that then as at all times,—

> "The air is full of farewells to the dying,
> And mournings for the dead;"

and that the earth is green above, only because it has graves below.

A bright warm flush was over the whole scene, and the sense of a great weight lifted off my heart, and of painful, impotent sympathy with suffering, exchanged for devout rejoicing over a warfare accomplished, and a battle won, was restrained only by the feeling that to his bereaved relatives his peaceful end had but endeared him the more, and made the loss the greater. Death armed with the sting of sin, can never be for us other than a robber and an enemy, who does not willingly translate any of his victims to the kingdom of the blest. But he seemed to wear his least appalling look that day, and as I thought over all the past, my thoughts shaped themselves into the lines which were afterwards in a completed shape committed to the press.[1] Their publication was the occasion of this Work, and I may not unfitly reproduce them here.

> Death has at length released thee,
> Thou brave and patient one!
> The unutterable pangs are past,
> And all thy work is done.
>
> Thou wert a Daily Lesson
> Of Courage, Hope, and Faith;
> We wondered at thee living,
> And envy thee thy death.

[1] Monthly Journal of Medicine, September 1849, p. 1093.

Thou hast gone up to Heaven
All glad and painless now;
The long worn look of anguish
Has left thy noble brow.

Thou wert so meek and reverent,
So resolute of will,
So bold to bear the uttermost,
And yet so calm and still.—

We think of thee with sorrow,
Thy sad untimely end;
We speak of thee with pity,
Our sore-tried suffering friend:—

We cheat ourselves with idle words,
We are the poor ones here;
Sorrow and sin and suffering still,
Surround our steps with fear.

Our life is yet before us—
The bitter cup of wo,
How deep it is, which each must drink,
No one of us doth know.

The Shadow of the Valley,
Whose gateway is the tomb,
Spreads backward over all of us
Its curtain-cloud of gloom.

Some stand but at the inlet,
And some have passed within,
O'er all the shadow hourly creeps,
And we move further in.

Thou art beyond the shadow,
Why should we weep for thee?
That thou from care, and pain, and death,
Art set for ever free.

Well may we cease to sorrow;
Or if we weep at all,
Not for thy fate, but for our own,
Our bitter tears should fall.

'Twere better still to follow on
The path that thou hast trod,
The path thy Saviour trod before
That led thee up to God.

A few hours later we gathered to his funeral. The whole town, I may without exaggeration say, took part in it. A large number of medical men from Edinburgh, including several of the Professors, crossed the Firth of Forth to be present. The Professors of St Andrews in their robes; the students in their picturesque red gowns; the magistrates, clergymen, ministers of all denominations, and other inhabitants of the town and neighbourhood, followed the coffin surrounded by the relatives. Up the wide streets with doors and windows occupied by onlookers—wanting only solemn music to have hushed the babble of untimely tongues—the mourners slowly found their way to the church-yard gates. Through them they passed, defiling between the bases of the ruined pillars of the cathedral, over the very ground where, ages before, monks sang the *De Profundis* and *Dies Irae* at the funerals of their brethren; and within the shadow of the ancient tower, which for centuries has traversed the space now occupied by the church-yard, they left the body of John Reid to await the resurrection of the just.[1]

Two years have elapsed since he was laid in his grave, and we can now look back with calmness on his life and character. They will bear the closest examination. He was not a man of genius, and he scarcely gave himself credit for being a man of talent. Such, however, he eminently was. His early education was limited, and in many respects imperfect, and he had reached his majority before he had the opportunity of profiting by a wider circle of influences. It was otherwise, however, with his professional studies, which he prosecuted at two of the most celebrated European schools, under the

[1] Dr Reid's attached friend, the Rev. Dr Cook, preached his funeral sermon on August 5, from Zechariah i. 5. "*Your fathers, where are they?*" It was listened to by a large audience of interested hearers. I have been kindly favoured with Dr Cook's estimate of his friend's character, of which I have availed myself throughout this work. A tablet to Dr Reid's memory has been affixed, through the care of Mrs Reid, to the church-yard wall adjoining the spot where he lies beside his infant sons. He left one daughter, and another was born shortly after his death.

ablest teachers, and in the company of the most intelligent students. In intellectual character he was such a man as Bacon would have given his right hand to, and would have heartily trusted to work out and illustrate in practice the precepts of the Novum Organon. Seldom has a purer specimen of an inductive reasoner been seen than was supplied by John Reid. He had great powers of analysis, and the nature and amount of every element essential to a conclusion was thoroughly ascertained by him before any attempt at generalisation was made. He was never hasty in his generalisations; but I am not aware that in any of his inquiries he missed their significance even in minor matters; and no one, I believe, has found in his analyses the grounds of materially wider conclusions than he drew. He never practised *deductive* reasoning, nor was he quick in discerning analogies, or ready to acknowledge these, when suggested by others.

The transcendental anatomy, as it has been half commendingly, half sneeringly styled, which found so much favour in the eyes of many of his contemporaries, found none in his. To begin like Geoffroi St Hilaire, Oken, and the other anatomical transcendentalists, with the conception of one ideal archetypal form, on which as on a universal pattern or model all animal structures had been planned, and with this as a guiding idea, to examine every animal organ in search of the archetype, was a way of seeking for truth altogether foreign to Dr Reid's habits of investigation. He did not, in fact, appreciate the value of such deductive researches, which, although more rarely admissible than inductive inquiries in physical science, are much richer in fruit when lawfully prosecuted. No man of science now despises transcendental anatomy, which, in the hands of Professor Owen and his disciples, is daily unfolding truths not more new than beautiful.[1]

[1] The reader will find in Owen's interesting work "On the Nature of Limbs," and still more fully in the last edition of Dr Carpenter's *Principles of Physiology, General and Comparative*, 3d edition, 1851, an account of the

John Reid did not despise it. He simply set it aside as a kind of inquiry, for which he had no relish or fitness, and which was mixed up by its early students with speculations such as provoked, from more discursive spirits than his, the summary decision that it was "a pack of impious, unintelligible German nonsense."

Wisely understanding his own strength, he confined himself to inquiries exactly the opposite of those favoured by the transcendental anatomist. Hypothesis was not merely avoided but put out of sight. A mind disembarrassed of every preconception as to the conclusions it should find worthy of adoption, was what he struggled to possess, and with rare success, attained to possessing. An inquiry was for him like a campaign in an enemy's country, where every inch of ground is contested, and must, step by step, be won by the victorious force. He was as careful to provide for retreat, should it appear that a false and untenable position had been occupied as to secure the means of advance to the heart of the territory invaded; and it was not by "*tours de force*," or "*coups de main*," but by deliberate daily marches, careful surveys, and patient sieges, that he hoped or cared to conquer new truths. In this respect he did not more wisely estimate his own powers, than set an example to his fellow-students in all departments of knowledge. If men of genius would more frequently give themselves credit for being only men of talent, and men of talent would adjudge themselves only men of patience, fewer

beautiful doctrine referred to in the text. Oken and some other of its foreign advocates, propounded it along with certain scarcely intelligible mystical speculations, which have led not a few in this country to set down the entire hypothesis as a dangerous and atheistic doctrine. So far, however, is it from being an irreverent, not to say an infidel speculation, that we have only to add to the conception of a Universal Archetypal form the datum of the recognition of God as its author and applier, to find in it an argument in favour of the greatness, and knowledge, and wisdom of the Creator, such as the older physical natural theologies could not supply. It furnishes in particular a proof of the *oneness of counsel* of the Architects of the universe, and a probability therefore of their *oneness in being*, of the most striking and convincing kind.

of both would make shipwreck, and their enterprises would be crowned with greater and more conspicuous success. Patience, perseverance, honesty, and firmness, were the only intellectual virtues that John Reid *professed* to possess; but he possessed in addition a keen, clear intellect, somewhat tardy in its movements, but all the more steady; to be likened rather to a catapult with its slowly acquired, but ultimately great momentum, expended on the propulsion of a rock, than to a swiftly strung bow sending a light arrow to its mark.

Truth and error were for him not half-sisters, as they are for many, but children of unlike and opposing races. Though a most cautious reasoner, he was the reverse of a timid one, and if some thought that he demanded too much proof when a vexed question was under discussion, no one complained that his final conclusion was an ambiguous one. Nothing, indeed, was more unwelcome to him than inconclusive reasoning. He could not let it pass unreproved even in the family circle, and when it affected only indifferent questions. With some kindly, often playful, but always decided allusion, he would repel hasty inferences, although the matter at stake was very trifling; not from concern for it, but in obedience to the strong logical instinct which actuated him.

In this strong development of the logical faculty lay his intellectual strength. It implied a power of discerning truth, whenever its possessor cared to discern it; and he always did. From his earliest days, his honesty, integrity, and truthfulness were conspicuous. His native independence, and desire to justify the pains which his parents had expended on his education, first called those instincts into action, and their gratification was too pleasant to need much further stimulation.

In truth, he had more delight in purely intellectual studies, including all questions on which a decision can be reached by logic, than in any other mental work, which did not call into action his affections or religious sympathies. Of music he

was not fond. He had a certain relish for dance-music, the time or rhythm of which he appreciated, but he was indifferent to melody. He often regretted that he could not draw; and fine paintings he always regarded with interest. The poetical works of Milton, Thomson, and Cowper, were provided with a place of honour on his shelves, and he had more than one edition of the two former, on which he set peculiar value. He loved the resounding march of Milton and Thomson's sonorous lines, and at one period of his life, his style savoured a little of grandiloquence. It could not, however, be said that he was by nature deeply endowed with poetical instincts, nor did he profess to be. Languages he learned rather slowly, and did not pronounce peculiarly well. Great logician though he was, he had no aptitude for mathematics or arithmetic. The former he reluctantly studied at school; the latter interested him only as an instrument of research, and he was by no means ready in using it. In his statistical inquiries he gladly devolved upon others the performance of the requisite arithmetical operations, and concerned himself only with the results. In this respect he added another to the many proofs which have been given, that there is no necessary connection between mathematical (including arithmetical) capacity and logical acuteness and power. Whatever he once acquired he retained with great tenacity. He was slow to form an opinion and as slow to change it. This tenacity of nature would have given a severe and unpliable aspect to his character, but for the keen sense of humour native to him,—which, though often kept down, was ever and anon irrepressibly rising to the surface; and even when it did not appear there, pleasantly tempered the whole man.

He was not witty, or quick in repartee. His more nimble-witted friends sometimes made considerable demands on his patience and good nature. He made no attempt to reply, *seriatim*, to their lively sallies, but at intervals he would silence whole discharges of their light artillery, by a single quiet burst of humour free from all bitterness, but not

untinged with sarcasm. Often his only reply to endless bantering was a hearty laugh; all the heartier the harder he was hit. But no one knew better how to repress by a mere look, the untimely jestings of those whom friendship did not entitle to tax his good nature.

He had a peculiar pleasure in watching the amusements of the young. He has left it on record in a paper written about four months before his death, "that some of the sweetest hours he enjoyed on earth were derived from the innocent and cheerful sports of children."

The fine moral qualities of his character were hidden from all but a few intimate friends, and even they had to make allowances for a reserve which never forsook him. Strangers sometimes mistook his shyness for indifference, and set down his unconscious unobservance of little matters of formal etiquette as deliberate rudeness. But they were guilty of a great mistake. To conventional formalities, indeed, he gave little concern. His early days had been passed in a simple country home, and he had not opportunity or inclination afterwards to become a man of fashion. But he was too good-natured to find any pleasure in crossing those who were precisians in etiquette, and he never willingly offended them. Friends and books were his two great desires, till religion filled his heart; but it was remarked of him, that though frugal, economical, and self-denying, he was never heard to estimate anything by its money value. His unwillingness to offend the prejudices of others, went far beyond the mere avoidance of unwelcome topics. He was scrupulously and tenderly careful of their feelings, which it vexed him to wound. He disliked gossip, and still more scandal, and in all circles where he had authority, emphatically discountenanced them. Of those even who had wronged him, he rarely spoke upbraidingly, and only to their faces. To students and others under his control, or within his power, he was specially kind. When the candidates for graduation at St Andrews all passed with honour, he rejoiced greatly; if any were rejected, he

would set off early next morning on a distant visit, or if that were impossible remain in bed, rather than encounter them. Towards the poor he was very considerate. He would sit up all night with the most wretched when they were ill; nor were the claims of wealthy patients allowed to interfere with the demands of the poor on his attention. To sick children he was singularly tender and gentle, and the people in St Andrews, who perceived and appreciated this, greatly loved and honoured him.[1]

One so kind to strangers was not likely to fail towards relatives and friends. Even when busiest in Edinburgh, the least rumour of illness at Bathgate sent him to the spot, although he could reach it only in the evening, after a long day's work, and had to return to Edinburgh early next morning. His dying brother-in-law expressed the feelings of all his relatives, when he welcomed him with the words, "There comes the best of fellows, the kindest of friends." How deep and lasting his filial affection and obedience were, has fully appeared; and how blessed in spite of all its later sorrows was his married life. I will add but another proof of the warmth of his affectionate heart. Among the papers given me are more than one too sacred for public quotation, in which he refers to the many and earnest prayers he has offered up, and continues to offer, to God, for the spiritual welfare of his relatives. One of these papers is in the form of a pretty long letter, which he desires, shall be given, at a certain period after his death, to the dearly-loved relative for

[1] A lady of his family has informed me of the following circumstance:—"When at St Andrews, there was a poor woman whose child Dr Reid attended night and day. At last, hope of recovery was abandoned, and he left, after telling her that she must now trust in God. This was before the advent of his illness. The poor mother was a godly person, and stated, that when she engaged in prayer, Dr Reid was presented before her; and filled with gratefulness for his kindness to her child, she frequently and earnestly besought God to bless him." I do not know whether this good woman is living or not, but sooner or later she will learn how amply her prayer has been answered.

whom it is intended. Love stronger than death, deeper than the grave, breathes in every line; and a solemn, touching, gentle earnestness flows through the mingled prayer, and praise, and exhortation, which form its burden. Such memorials of his affection and piety, more than one friend, besides relatives, received. I have quoted one already.[1] Those who are fond of representing a dying Christian, as selfishly bent on making certain his entrance on an eternity of bliss, may gather from these references that John Reid, like all true Christians, measured his love for God by his love to his brother, and realised the truth of the beloved Apostle's words, "If a man say, I love God, and hateth his brother, he is a liar; for he that loveth not his brother whom he hath seen, how can he love God whom he hath not seen?"

The most remarkable single feature, however, in John Reid's character, in the eyes of his biographer, is his amazing courage. Few men have possessed it in all its shapes in larger measure. Suffering terrifies some men, and affronts others; but of pain, John Reid was neither afraid nor ashamed. The elements of fortitude are too many, and too mixed; some belonging to the body, and some to the soul; to be easily or successfully separated. I will not attempt the analysis. Surgeons know that the same amount of cutting or burning inflicts a very different amount of suffering on different patients. One man will lose a limb with less complaint than another a tooth. John Reid's strong powerful body was not one of the excessively sensitive ones, and he certainly possessed largely that element of animal courage which is furnished by an athletic frame, unexcitable nerves, and a regular pulse. But such a disease as cancer soon makes havoc of the strongest frame, jars the least irritable nerves, and quickens the calmest pulse. He confessed this when he had recourse to opiates, and betrayed it by his

[1] *Ante*, p. 215.

haggard countenance and sleepless vigils. The pain, however, which he could not abolish, he could conquer by enduring. He rose up against it gravely and quietly. It never vanquished him; he subdued and triumphed over it; he was only once heard to groan. In this silent endurance of suffering, no Spartan, no Stoic, or Red Indian ever surpassed him. But he went far beyond passive endurance. He courted suffering at the hands of the surgeons: he solicited their interference, and assisted in operating on himself. Not from fretful impatience, or restless desire for the trial of new remedies; but after a calm estimate of the probable issue of his malady, and the decision that there was but one treatment which held out even a shadowy promise of success, he looked into his heart and felt that he was bold to bear the uttermost. Moral courage such as this is very rare. It went far beyond the recognition and endurance of bodily suffering as inevitable. It took upon itself the responsibility of risking life on the step, and of involving the happiness of the nearest and dearest relatives in the issue. And when to such physical and moral courage was added the higher element of Christian fortitude, and it was profoundly realised by the sufferer, that the bodily and mental agonies which he endured were not the avenging tortures of some cruel demon, or the needless sufferings of a creature forgotten or forsaken by God, but the tender mercies of a Father who chasteneth all whom He loveth: he became a spectacle and an example to men. Nowhere have I found a more striking instance of the agonistic courage of the man, united to the uncomplaining endurance of the woman. Nowhere have I seen recorded a more continuous and unbroken, unfaltering patience, through month after month of trial, disappointment, and bitter agony. Seldom has a death-bed been more thickly surrounded by physical horrors, and seldom have Faith and Patience more signally triumphed over Death and the Grave. And therefore, I have written this Life. It is sad to be the mere spectator of the last acts of such a tragedy as I have re-

corded; but for all of us who are not the victims of sudden death, there are sadder things than such a spectacle in store. One by one we must, each in turn, descend from the spectator's place to the stage, and take part in the play, till finally the chief part in the tragedy devolves upon us, and we must die as a fool dieth, and go down to destruction, or find faith to say, "I am persuaded that neither death, nor life, nor angels, nor principalities, nor powers, nor things present, nor things to come, nor height, nor depth, nor any other creature, shall be able to separate us from the love of God which is in Christ Jesus our Lord."

John Reid's life, had it wanted the Christian element, and closed only with the Stoical consolation of an earlier period, "Better men than I have suffered this fate," would have been like a serene summer day eclipsed at noon, and setting in dark electric clouds. Over his grave we could but have raised the Pagan emblem of the broken, uncompleted column. But for him, it pleased God, that at "evening time it should be light." The close of his life was like the setting of the Arctic sun, which but dips below the horizon, and then bounds up again into the bright heavens. His work is all done, and he awaits perfection. We can build him no befitting tomb, but we can think of him as "a pillar in the house of God, which shall go out no more for ever."

I close with the prayer for every reader and for myself which John Reid's predecessor in a chair at St Andrews, Dr Chalmers, offered up when he left his mother's death-bed, "May I be enabled to sit loose to a world, all whose cares, and pleasures, and triumphs, but guide every child of Adam to the bed of his last agonies."

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